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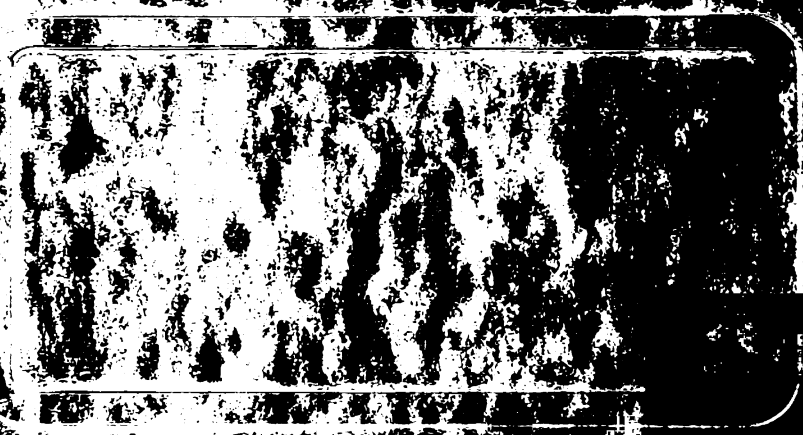
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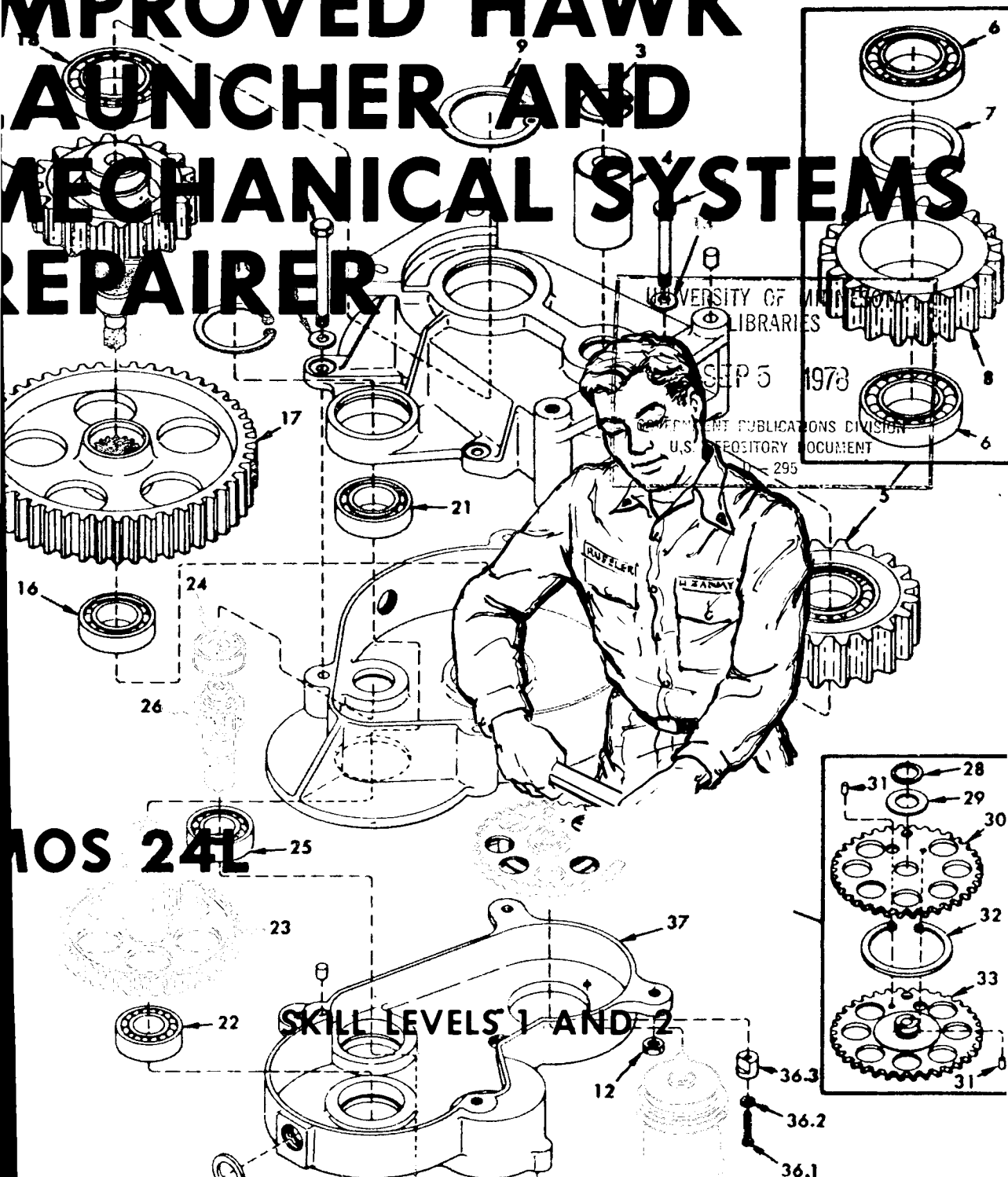


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FM 9-24L1/2

# IMPROVED HAWK LAUNCHER AND MECHANICAL SYSTEMS REPAIRER



## SOLDIER'S MANUAL

HEADQUARTERS, DEPARTMENT OF THE ARMY



Change  
No. 1

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 4 March 1980

SOLDIER'S MANUAL  
IMPROVED HAWK LAUNCHER AND MECHANICAL SYSTEMS REPAIRER  
MOS 24L  
SKILL LEVELS 1 AND 2

This change covers the equipment modification of the PIP and includes:

New task summary sheets which outline for you the tasks that will be critical to your performance of duty in a unit when the Product Improvement Program (PIP) Phase I is implemented. The new task summary sheets are identified by this note:

THIS TASK IS APPLICABLE TO PIP HAWK ONLY

Revised task summary sheets for tasks applicable to both IHAWK and PIP HAWK. The primary difference in performance of these tasks is the technical manual references used. The revised task summary sheets are identified by this note:

THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

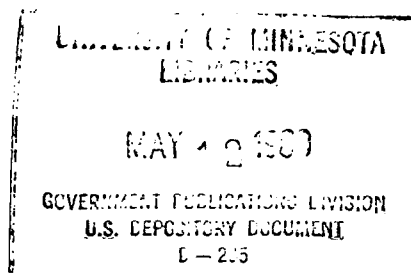
The technical manual section only of appendix A.

The PIP tasks will be covered by the PIP track of the 1980 Skill Qualification Test. The revised tasks will be covered in the IHAWK track of the 1980 Skill Qualification Test.

References listed in performance measures for the PIP HAWK and IHAWK tasks are from the IHAWK TMs for convenience sake only. USE THE CORRECT TM.

FM 9-24L1/2, 18 September 1978, is changed as follows:

1. New or changed material is indicated by a star (★).



2. Remove old pages and insert new pages as indicated below:

Remove pages

2-103 thru 2-106  
2-139 and 2-140  
2-161 thru 2-166  
2-221 thru 2-224

2-239 thru 2-244  
2-283 and 2-284  
2-317 thru 2-322

2-333 thru 2-340

Insert pages

2-103 thru 2-106  
2-139 and 2-140  
2-161 thru 2-166  
2-221 and 2-222  
2-223 and 2-223.0  
2-223.1 and 2-224  
2-239 thru 2-244  
2-283 and 2-284  
2-317 and 2-318  
2-319 and 2-319.0  
2-319.1 thru 2-322  
2-333 thru 2-336  
2-336.1 and 2-336.2  
2-337 and 2-337.0  
2-337.1 thru 2-340  
A-8.1 and A-8.2

3. Put this change sheet in front of the publication for reference.

By Order of the Secretary of the Army:

**E. C. MEYER**  
*General, United States Army*  
*Chief of Staff*

Official:

**J. C. PENNINGTON**  
*Major General, United States Army*  
*The Adjutant General*

**DISTRIBUTION:**

*Active Army and USAR: Special.*

*ARNG: None.*

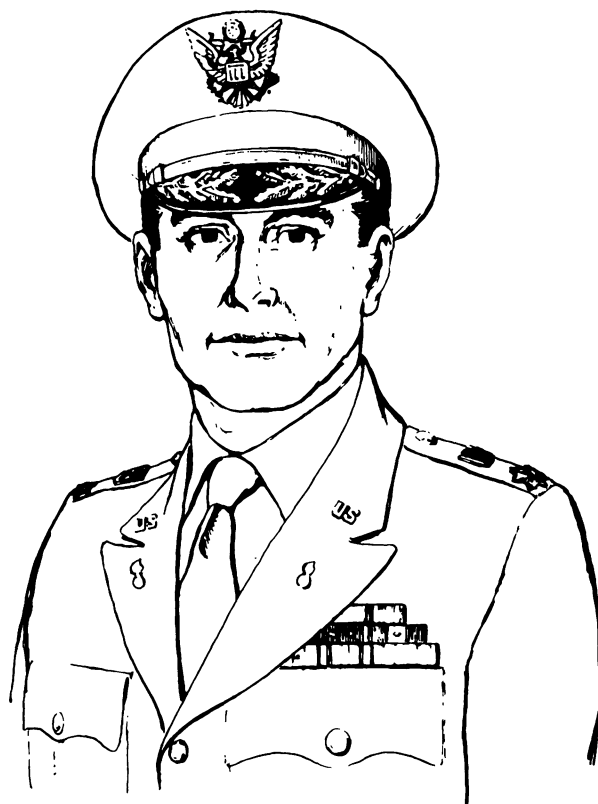
**Additional Requirements:**

*Unit Requests* - Units requiring additional copies may requisition direct from US Army AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220.

*Soldier Requests* - Soldiers may order directly from preparing agency by using preaddressed reorder blank contained in printed manual.

# ATTENTION COMMANDER!

**DISTRIBUTE THIS MANUAL TO EACH  
SOLDIER IN MOS 24L, SKILL LEVELS  
1, 2, 3.**



This Soldier's Manual lists and explains the tasks which a soldier must be able to do to be MOS qualified. By following the road map this manual provides, the soldier should progress readily to positions of responsibility according to individual aptitude and motivation.

Soldier's Manuals will be distributed at unit level, based upon assigned strength in the particular MOS and skill level. If you need more manuals for MOS study, libraries, or other training needs, send request for publication directly to the US Army Publication Center, 2800 Eastern Boulevard, Baltimore, MD 21220.

Soldiers are responsible for keeping their individual manuals up-to-date. The manuals are designed to build one upon the other. Each skill level manual will fit one behind the other in a 3-ring binder. For example, Grades E1 through E4 should have Skill Level 1/2 manual; Grade E5 should have Skill Level 1/2 and 3 manuals; Grade E6 should have Skill Level 1/2, 3 and 4 manuals; and Grades E7, E8 and E9 should have Skill Level 1/2, 3, 4 and 5 manuals (as appropriate). The next higher manual tells what tasks the soldier must be able to do at the next skill level. In short, the soldier needs all manuals to the present skill level plus the next higher skill level manual.

When soldiers are promoted to E5, E6, E7 or E8, they must order their next higher skill level manuals directly from Commandant, US Army Missile and Munitions Center and School, ATTN: ATSK-DS-AS-P, Redstone Arsenal, Alabama 35809. A postage free order form at the end of this manual is provided for this purpose.

This Soldier's Manual was prepared by the US Army Missile and Munitions Center and School.

E. A. Rudd  
Colonel, Ordnance Corps  
Commandant

# RESERVE COMPONENT



## ARMY NATIONAL GUARD – ARMY RESERVE

This page contains information for you, the Reserve Component soldier. This Soldier's Manual, as published, is representative of the critical tasks to be performed by the Active Army soldier in your MOS on equipment available in the Active Army inventory.

Most tasks in this manual apply to you without changes. Some tasks, however, may require modification due to different equipment, facilities and training time available to you. If your MOS is unique, reserve component task summaries may be added as insert pages. Each will be marked top and bottom "RESERVE COMPONENT." You will put these pages in your manual when you receive them.

By now, you are probably wondering why this special page. It is to inform you that due to time, this Soldier's Manual has not undergone the review process necessary to make it fit your job as a Reserve Component soldier as well as it fits your Active Army counterpart. Future publications of Soldier's Manuals will undergo the necessary review process. This manual will be included in that review and change sheets will be published and distributed to you. Meanwhile, you will be using this manual along with your Active Army counterpart.

Many tasks that you learned in Basic Combat Training (BCT) and Advanced Individual Training (AIT) are in this manual. Others are critical tasks that you are responsible for learning on your own. Training references and materials are available and can be provided to you through your unit. Your performance in your duty position will be based on your ability to do all the critical tasks in this manual. It is to your advantage to take the initiative NOW.

FIELD MANUAL  
No. 9-24L1/2

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 18 September, 1978

IMPROVED HAWK LAUNCHER AND MECHANICAL SYSTEMS REPAIRER  
MOS 24L, SKILL LEVELS 1 AND 2

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FM 9-24L1/2

Users of this publication are encouraged to recommend changes and submit comments for its improvement. Comments should be keyed to the specific page, paragraph, and line in the text in which the change is recommended. Provide reasons for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publication) and forwarded to:

Commandant  
US Army Missile and Munitions Center and School  
ATTN: ATSK-TD-LS  
Redstone Arsenal, AL 35809

UNLESS OTHERWISE NOTED, THE  
WORDS HE, HIM, ETC., REFER TO  
BOTH MEN AND WOMEN.

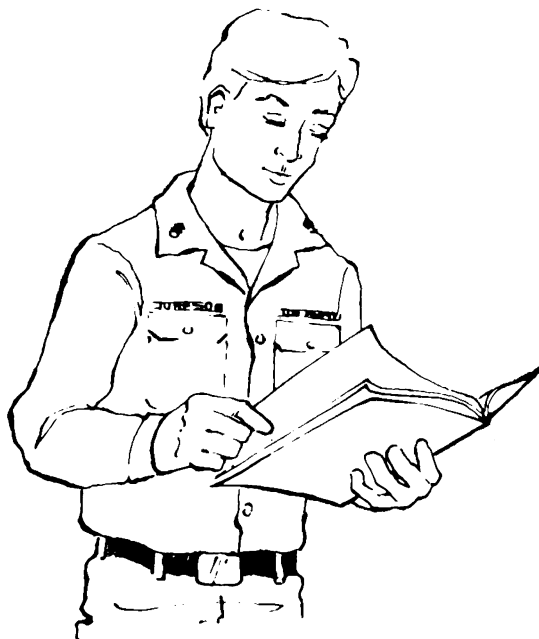
## Chapter 1

# INTRODUCTION



YOUR SOLDIER'S MANUAL

## WHAT IS A SOLDIER'S MANUAL?



Your Soldier's Manual describes what the US Army expects you to know and be able to do in your MOS at this skill level. Although the Soldier's Manual does not contain everything you should know or be able to do, it does contain those tasks that are critical to your success on the job and to survival on the battlefield. In addition to job tasks, this manual describes the management and training systems set up to help you qualify for promotion and to achieve a rewarding career as a professional soldier.

## WHAT IS IN YOUR SOLDIER'S MANUAL?

In your Soldier's Manual you may see some terms that you are not completely familiar with. You will find information concerning your Military Occupational Specialty (MOS), your Skill Level, and your Duty Position. Before going into the contents of the manual, we will clarify these terms.

- **MOS** - An MOS is a number assigned to a grouping of closely related jobs or duty positions. In most cases an MOS is awarded to a soldier after completion of a military school. In some cases an MOS may be awarded after a soldier has performed in a specific job for a required period of time. Your MOS identifies your particular specialty.
- **SKILL LEVEL** - This is the level of proficiency under which specific military jobs are grouped. It is the level of competence at which you are expected to perform, according to your rank. If you are in pay grades E1 through E4 you are in skill level one. If you are in pay grade E5 you are in skill level two. Pay grade E6 is in skill level three, and so forth.
- **DUTY POSITION** - It is a major subdivision within a soldier's job title. It is the job that you work at daily. Many job titles in the Army have more than one duty position.

Your Soldier's Manual contains task summary sheets which outline to you those tasks related to your MOS and skill level which are considered critical to your performance of duty. You must be able to do these tasks in order to be qualified for retention and/or promotion. Critical tasks may be one of three different types.

■ **TASKS FOR ALL SOLDIERS**

All soldiers in the Army must be able to do these tasks, regardless of MOS or skill level.

■ **TASKS FOR ALL IMPROVED HAWK REPAIRERS**

All soldiers in the same subfield or a career management field do these tasks. A career management field is made up of many similar MOS's. These MOS's are grouped into subfields by system and type of maintenance. Every soldier in the same subfield has to be able to perform these tasks regardless of skill level or job title.

■ **TASKS FOR ALL IMPROVED HAWK LAUNCHER AND MECHANICAL SYSTEMS REPAIRERS**

These tasks relate to a specific MOS and duty position. In your MOS, there is only one duty position. If you are a skill level one soldier, you are responsible for all these skill level one tasks. If you are skill level two, three, or higher, you are responsible for all these tasks in every skill level below you.

All skill level one and two tasks are in chapter 2 of this manual.

At the beginning of each chapter of your Soldier's Manual, you will find a list of critical tasks. Following the list, you will find the tasks presented in the following format:

## **TASK DESCRIPTION SHEETS**

**A STATEMENT OF WHAT YOU MUST BE ABLE TO DO.**

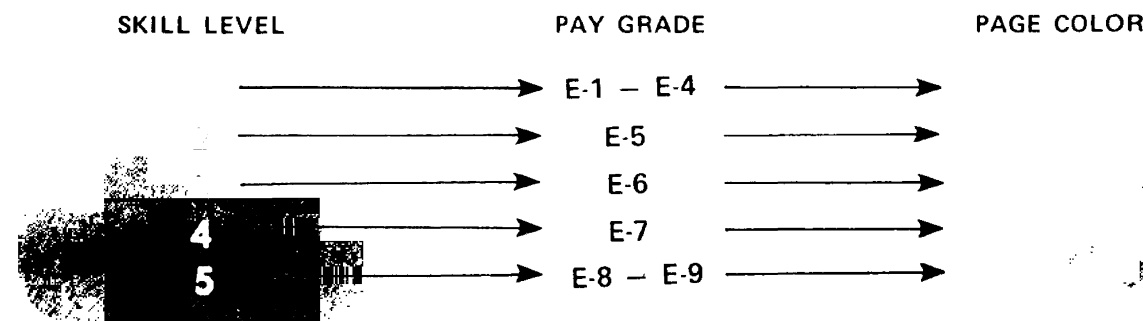
**THE SITUATION IN WHICH YOU MUST BE ABLE TO PERFORM THE TASK.**

**A LIST OF WHAT YOU HAVE TO KNOW AND DO TO COMPLETE THE TASK.**

**A STATEMENT OF HOW WELL OR HOW ACCURATELY YOU MUST PERFORM THIS TASK.**

**A LIST OF TRAINING MATERIALS THAT YOU CAN USE TO LEARN HOW TO PERFORM THE TASK.**

Tasks for each skill level are color coded, for easy reference, as shown:



## HOW TO USE YOUR SOLDIER'S MANUAL

This manual should be kept in a three-ring looseleaf binder. When new or changed material is published, put it into your manual so you have the latest information. As you receive higher skill level manuals, they should be inserted in your three-ring binder.

Regardless of your present grade, you should begin to use your Soldier's Manual by studying, practicing and mastering the tasks listed for Skill Level 1.

You should already be able to do a number of these Skill Level 1 tasks. You learned some of them in Basic Combat Training (BCT) and others in Advanced Individual Training (AIT). Perhaps you learned some of the tasks while working on the job or while participating in unit training. However, knowledge that is seldom used and skills that are seldom practiced are soon lost. It really doesn't matter where or when you first learned a task. The important question is - How well can you do it now?

If you do not understand a particular task, ask your supervisor to explain it and to assist you in obtaining the right study aids and references so that you may study and practice it. The senior NCO's and officers in your unit use your Soldier's Manual to help them plan your training and to evaluate your skills. Ask them for advice and assistance. They want to help.

When you are confident that you have mastered all the Skill Level 1 tasks, go on to the Skill Level 2 tasks. Continue to study and practice until you have mastered all the tasks for both Skill Levels 1 and 2. If you are currently serving in grade E-4 or below, you need not go any further.

Once you have been promoted to E-5, your unit commander will give you Skill Level 3 tasks. You should immediately begin to master the Skill Level 3 tasks. At grade E-6, you should master the Skill Level 4 tasks. At grade E-7, you should master the Skill Level 5 tasks.

Check with your supervisor about the Soldier's Manuals you may need. An order form is in Appendix C of this book.

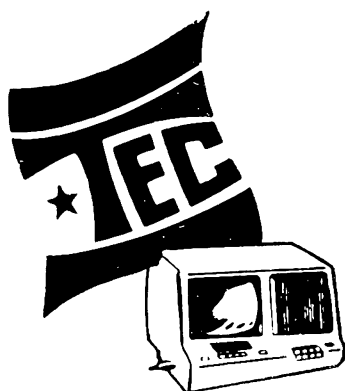
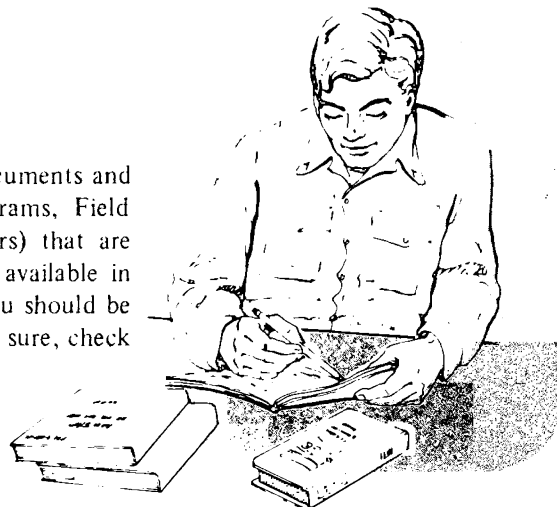
Two points to remember about the tasks in your Soldier's Manual are:

- To qualify for promotion (E-5 and above), you must master the tasks for which you are seeking promotion, as well as the tasks for the grade in which you are currently serving.
- As you progress to higher skill levels, you remain responsible for all the tasks specified for the lower skill levels and for training soldiers at all lower skill levels.

## WHAT ABOUT AIDS AND REFERENCES ?

As you use your Soldier's Manual you will be referred to other publications for aid and reference. These publications include:

Department of the Army (DA) Publications are documents and books (e.g., Army Training and Evaluation Programs, Field Manuals, Technical Manuals, and Training Circulars) that are distributed throughout the Army. They should be available in your unit. Because changes are frequently made, you should be sure you have an up-to-date version. If you are not sure, check with your orderly room.



### TRAINING EXTENSION COURSE LESSONS

TEC lessons are designed to assist you in improving your MOS and job proficiency. New lessons are constantly being produced and should be available in your battalion. Check through your chain of command to see which TEC lessons are currently on hand in your battalion.

### US ARMY CORRESPONDENCE COURSE PROGRAM

Correspondence courses are self-study courses that, like the TEC lessons, are designed to assist you in improving your MOS and job proficiency. To enroll in a course, complete DA Form 145 and mail. Additional information about the correspondence course program can be obtained from the Correspondence Course Catalog, available in your orderly room, or by writing to:

Army Correspondence Course Program (ACCP)  
US Army Training Support Center  
Newport News, VA 23628



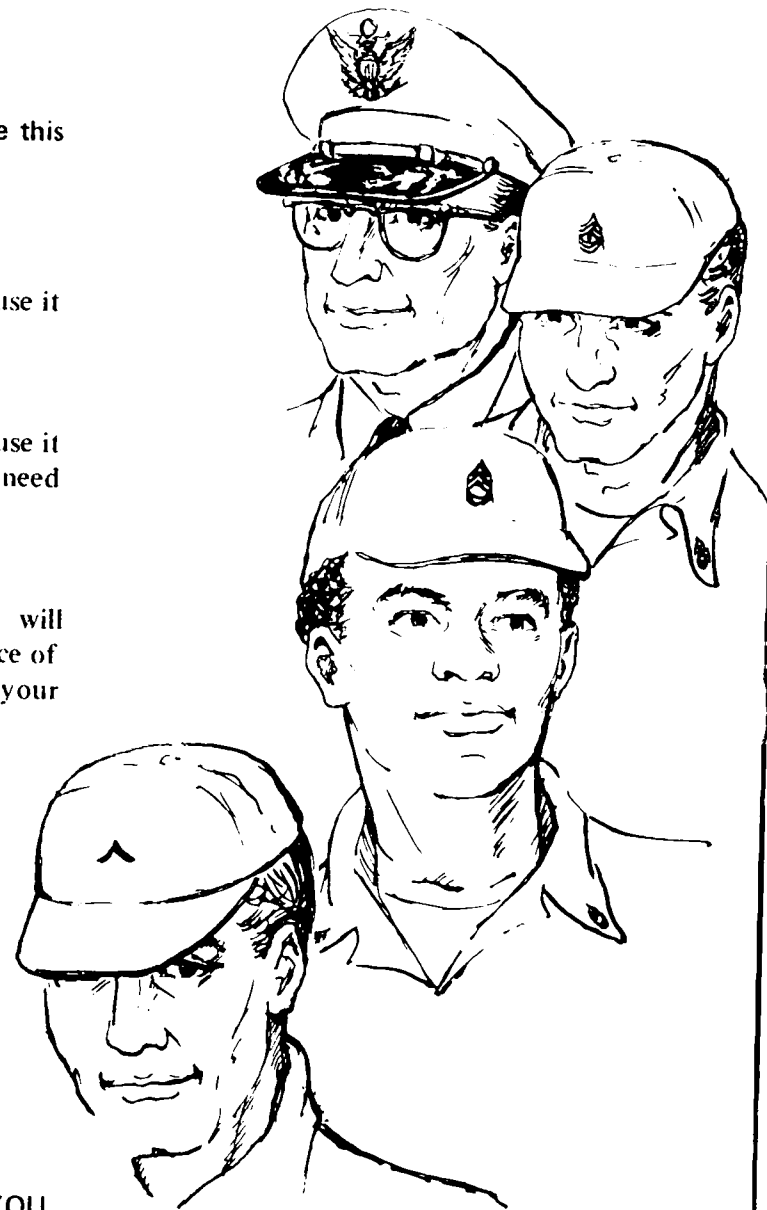
## HOW DO MY LEADERS USE MY MANUAL?

You are not the only one to use this manual . . . . Who else uses it?

Your ☐ will use it as a basis for unit training.

Your ☐ will use it to determine what training you need to be better qualified.

Your immediate ☐ will use it to measure your performance of the critical tasks required by your MOS and Skill Level.



THEY ALL USE IT TO MAKE YOU  
A BETTER SOLDIER

Know this manual and be able to  
perform the tasks listed in it.

## WHAT IS THE ENLISTED PERSONNEL MANAGEMENT SYSTEM?

### EPMS

The decision to adopt EPMS was made by the Army Chief of Staff in August 1974, and TRADOC issued implementing instructions in October 1974. EPMS is a management program designed to guide the career progression of every enlisted soldier through the integration of **TRAINING, EVALUATION, CLASSIFICATION, and PROMOTION** into a single well-coordinated system. The Army expects you to be the best soldier you can, and, to help you do this, EPMS has been developed. Your Soldier's Manual is one of the tools of EPMS.

### EPMS TRAINS ON MANY LEVELS

Training under EPMS is designed to prepare you for the skill levels at the next higher grade. Your training will consist of **Advanced Individual Training (AIT)** and periods of **on-the-job experience (OJE)** or formal training under the **Noncommissioned Officers Education System (NCOES)**. Correspondence courses may be taken all along.

At Skill Level 2 you may be selected to attend a **Primary Leadership Course (PLC)**. This course is designed for the soldiers who have been selected by their commander as having potential to become noncommissioned officers. It develops those training and leadership skills necessary for duty as an NCO. The PLC is taught at installation level.

Your AIT course will provide you technical training you will need to progress through your MOS structure. Technical training beyond that given in AIT will be provided through OJE, **Primary Technical Course (PTC)**, if one exists in your MOS, and the **Advanced Noncommissioned Officers Course (ANCOC)**. The PTC is for individuals selected by their commander as having the potential to become a senior technician and the ANCOC is made by Department of the Army. PTC and ANCOC are conducted at the US Army Missile and Munitions Center and School.

### YOU GET THE TRAINING YOU NEED

The three main ways the Army keeps track of training needs are:

- The **Army Training Evaluation Program (ARTEP)**, which rates your unit's training.
- The **Skill Qualification Test (SQT)**, which rates how well you can handle your MOS and skill level.
- The **Job Book**, which your supervisor uses to rate your work in your duty position.

The result from any one or all of the above will be a training program that will help you where you need it most. EPMS, then, is a system of management that benefits the Army and you. Use it and see that it is used.



## EPMS EVALUATES EACH SOLDIER



### ENLISTED EVALUATION SYSTEM (EES)

The EES operates to evaluate you -- the soldier. You are evaluated by two methods. The Skill Qualification Test (SQT) and the Enlisted Evaluation Report (EER). If you are in pay grades E1 through E3 you are evaluated by EER only, while soldiers in pay grades E4 through E9 are rated by EER and SQT.

The SQT is a test that must be taken and passed by all soldiers in pay grades E4 through E8 before they can be considered for promotion. If you are in Skill Level 1 (pay grade E4) you will take the Skill Level 2 SQT. A soldier in Skill Level 2 (pay grade E5) will be administered the Skill Level 3 SQT. A soldier in pay grade E6 will take the Skill Level 4 SQT. Pay grades E7 and E8 will take SQT 5 for promotion consideration, while an E9 will take the SQT 5 for MOS verification only.

At first glance it appears that regardless of your grade and skill level, you must take an examination that deals with the next higher skill level. This is only partially true. Each SQT comprises 67 to 75 percent of the tasks in your current skill level, and 25 to 33 percent in the next higher skill level. This ratio of tasks between skill levels is a sampling of the total tasks to determine if you know your present job and a little bit of the job at the next higher skill level.

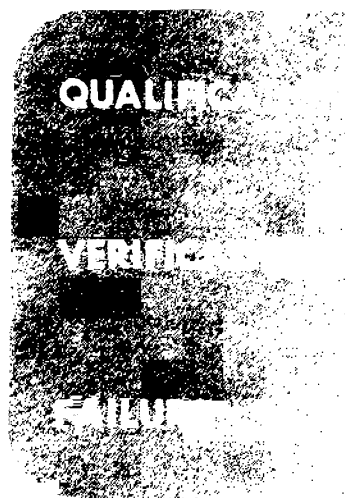
The SQT is made up of 3 components. There is a written component (WC), a hands on component (HOC) and a performance certification component (PCC).

- **WRITTEN COMPONENT (WC)** - The written component is a paper and pencil test where some tasks or parts of tasks can be done almost exactly as they are done on the job. This component is made-up of 2 to 10 questions with each question having 2 to 10 choices. Many times more than one choice will be correct. During SQT administration you will be told how many questions per scorable unit you must answer correctly to receive a GO for that particular unit. Most of your SQT will be in the Written Component, so remember the written questions are taken directly from the Soldier's Manual.

- **HANDS ON COMPONENT (HOC)** - The Hands on Component tests your ability to perform certain tasks with the equipment or training devices on which you work. They require physical and mental coordination, quick reaction, and the ability to do more than one thing at a time.
- **PERFORMANCE CERTIFICATION COMPONENT (PCC)** - Many tasks are difficult to test due to the length of time required to perform the tasks, the availability of equipment, the weather, the location and many other factors. When these factors limit the SQT's ability to test a critical task that task is assigned to the Performance Certification Component (PCC) of the SQT. Your supervisor will observe you performing these tasks over a 12 month period and then "certify" that you can or cannot perform these tasks. If you can perform the tasks satisfactorily you will receive a GO rating, if not, your rating will be NO GO.

Your SQT will require no more than 8 hours to take. You will be given 4 hours for the Written Component and 4 hours for the Hands on Component (if used).

#### YOUR SQT SCORE WILL PLACE YOU IN ONE OF THREE CATEGORIES



If you achieve a high enough score, you will become eligible for the award of Skill Level 2, and you will have taken a giant step toward being promoted to E5.

If you achieve a minimum passing score (not enough to qualify for Skill Level 2), you will verify your qualifications to retain Skill Level 1 in your MOS. You will then be able to retake the SQT one year later in order to be eligible for the award of Skill Level 2 and become eligible for promotion.

If you fail to achieve a minimum passing score, you may not be able to reenlist, and you may be subject to other personnel actions such as reclassification to a different MOS or even elimination from the Army.

#### KEEP TWO THINGS IN MIND ABOUT SQT's

- Your next SQT will be aimed one skill level higher than the pay grade you are serving in.
- Regardless of your grade and skill level, you are responsible for either performing or supervising the tasks required at all lower skill levels.

#### YOU WILL GET AN SQT NOTICE

An SQT notice will be sent to you at least 2 months before you take the SQT (12 months for a reserve component soldier). This notice will contain the task numbers of the tasks which will be tested, how each task will be tested (Written, Hands On, Performance Certification) and a sample question on each of the tasks to be tested. Be sure to study this notice, work the sample questions, and master the tasks to be tested.

### YOU WILL BE TOLD HOW YOU DID

One of the key features of the SQT is the feedback provided to the field as well as the test development agencies. The first results produced by the system are the Individual Soldier Reports (ISR). You will receive your ISR within 30 days after you complete your SQT. Your ISR will tell you the number of scorable units rated "GO," "NO GO," and "not observed" and give you a total percentage score. Based on the score, the ISR will tell you if you verified or failed to verify your present skill level, or if you qualified for the next higher skill level. Most importantly the report lists those tasks scored "NO GO" by task number. You can then match up the tasks on which you received a "NO GO" with the tasks in your Soldier's Manual and "bone-up" for your next SQT.

### ENLISTED EVALUATION SYSTEM ALSO CONTAINS YOUR EER

The other part of the enlisted evaluation system is your Enlisted Evaluation Report (EER). The EER is used by your supervisor to report information about your duty performance that cannot be measured by the SQT. Your attitude toward your job, how well you work with others as a team member, and your leadership ability are among the rated characteristics. If you get along with others and do your job satisfactorily, your EER's will be good.

### KNOW THE SCORE

Your combined score (SQT and EER) will determine the course of your Army career. It will be used to compare you with all other soldiers in the Army having the same MOS, skill level and pay grade.

### YOUR COMBINED SQT AND EER SCORE WILL DETERMINE YOUR ELIGIBILITY FOR:

- Retention of your present MOS and skill level.
- Award of the next higher skill level in your MOS.
- Promotion to the next higher grade.
- Reclassification into a different MOS.
- Retention in the Army.
- Reenlistment.
- Military and civilian schooling.

### EPMS CLASSIFIES EACH SOLDIER

Each specific job in the Army is given an MOS. As you will recall, an MOS is defined as a grouping of closely related jobs or duty positions. Each MOS in the Army is further classified into a Career Management Field (CMF). A CMF is a grouping of closely related MOS's. You are in CMF 23, which is an air defense missile CMF.

The following extract from AR 611-201 shows you the CMF in which you are classified, and it gives you a formal description of your job.

## IMPROVED HAWK LAUNCHER AND MECHANICAL SYSTEMS REPAIRER

### MOS 24L10

- Performs support level maintenance on the electronic systems of the Improved HAWK Launcher and the electrical, hydraulic, hydro-pneumatic, mechanical, portions of the Improved HAWK System Launcher, Improved Battery Control Central (IBCC), Improved High Powered Illuminator Radar (IHPIR), Improved Pulse Acquisition Radar (IPAR), Improved Continuous Wave Acquisition Radar (ICWAR), Improved Range Only Radar (IPOR), Information and Coordination Central (ICC), Improved Platoon Command Post (IPCP), Improved Simulator Station, Launching Section Control Box, system associated test equipment, Loader-Transporter Superstructure, and Support Maintenance Test Equipment (SMTE) Shops 1, 2, 3, 5, 6, 8, and 9, and all Mobile Teams Shops (MTS).
- Inspects, tests, and adjusts components to specific tolerances and determines shortcomings and deficiencies in electronic, electrical, hydraulic, hydro-pneumatic, mechanical, and electro-mechanical assemblies, subassemblies, and circuits with common and system special-design test equipment.
- Operates and performs organizational maintenance on SMTE Shop 3 and MTS.
- Operates and performs organizational and support maintenance, as authorized, on electrical and electronic portions of system associated portable test equipment employed in the maintenance of the Improved HAWK Launcher and the electrical, hydraulic, hydro-pneumatic, mechanical, and electro-mechanical portions of the Improved HAWK systems.
- Operates and maintains SMTE Shops 5, 6, and 8.
- Repairs unserviceable items by removing and replacing defective components and parts.
- Determines serviceability and disposition of defective assemblies, subassemblies, and parts.
- Performs quality control measures.
- Performs load testing, maintenance calibration, and repair of job-related tools and equipment.
- Serves on inspection and maintenance teams.

### MOS 24L20

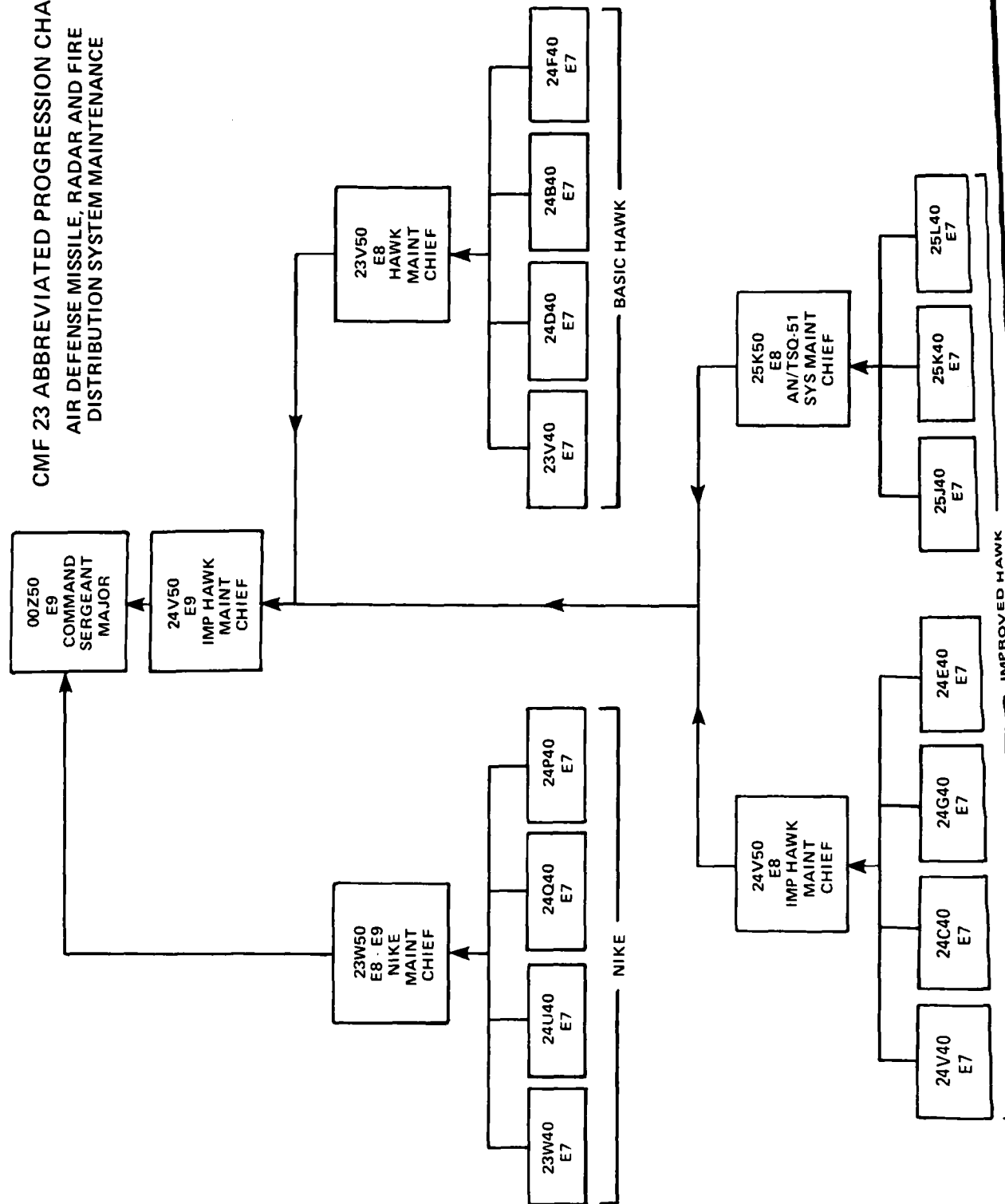
- Performs duties shown in preceding level of skill and provides technical guidance to lower grade personnel.
- Installs equipment modifications.
- Provides technical assistance to supported units.
- Completes maintenance and supply forms.

### MOS 24L30

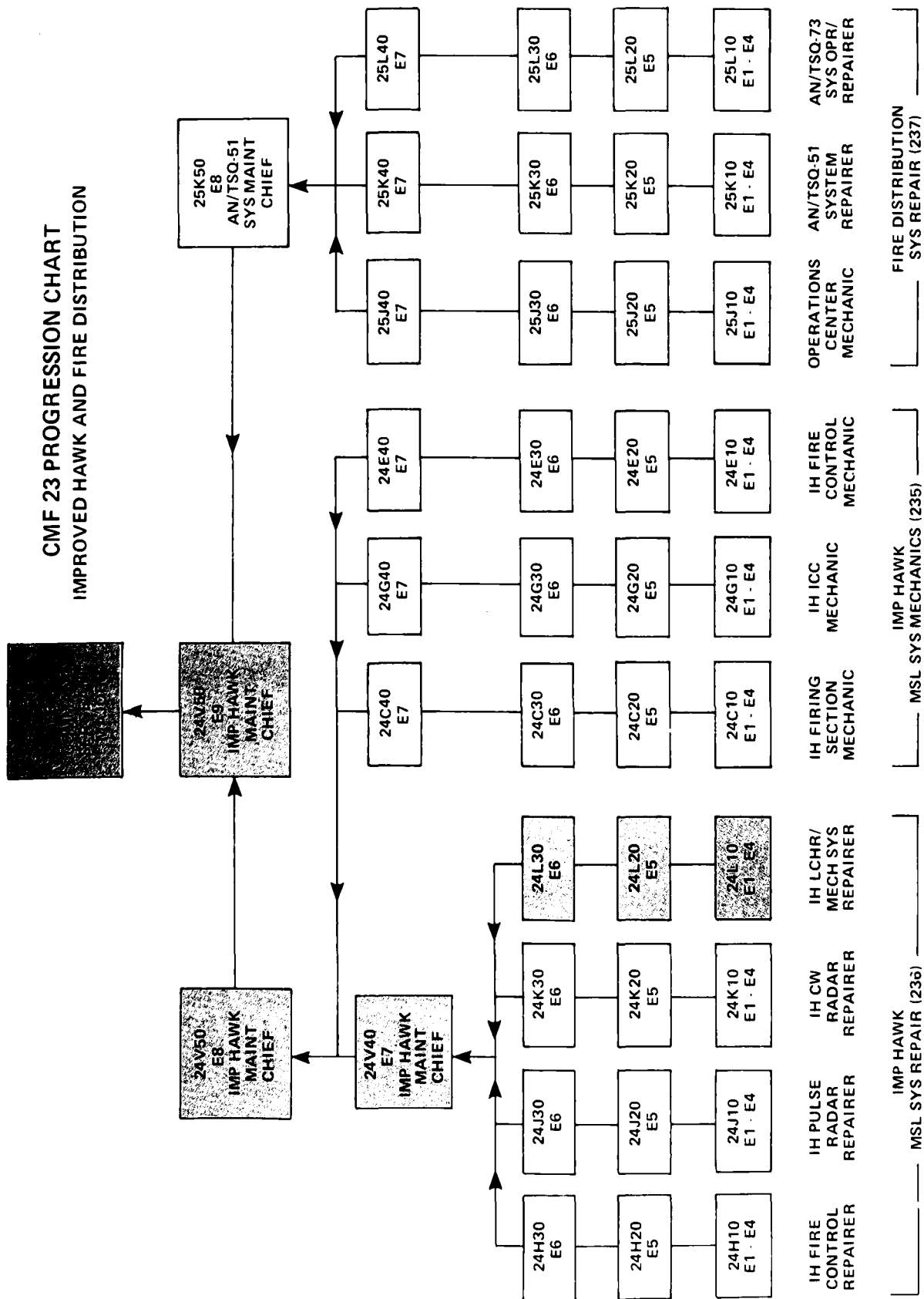
- Supervises duties performed at preceding levels of skill.
- Establishes workloads and repair priorities.
- Recommends procedures for receipt, storage, inspection, testing, and repair of items.
- Implements quality control measures.
- Performs initial and final type checkout and inspection of designated system items and their assemblies and subassemblies.
- Supervises inspection and maintenance teams.
- Organizes and conducts on-the-job training programs.
- Determines faulty work practices and demonstrates proper maintenance and troubleshooting techniques.
- Establishes and keeps maintenance records.
- Prepares maintenance reports.

After MOS 24L30 (skill level 3) your next promotion will be to MOS 24V40 (skill level 4), Improved HAWK Maintenance Chief. While performing the duties of skill level 3 you should obtain FM 9-24V4. This is the Soldier's Manual that contains all the critical tasks you need to know at skill level 4.

CMF 23 ABBREVIATED PROGRESSION CHART  
AIR DEFENSE MISSILE, RADAR AND FIRE  
DISTRIBUTION SYSTEM MAINTENANCE



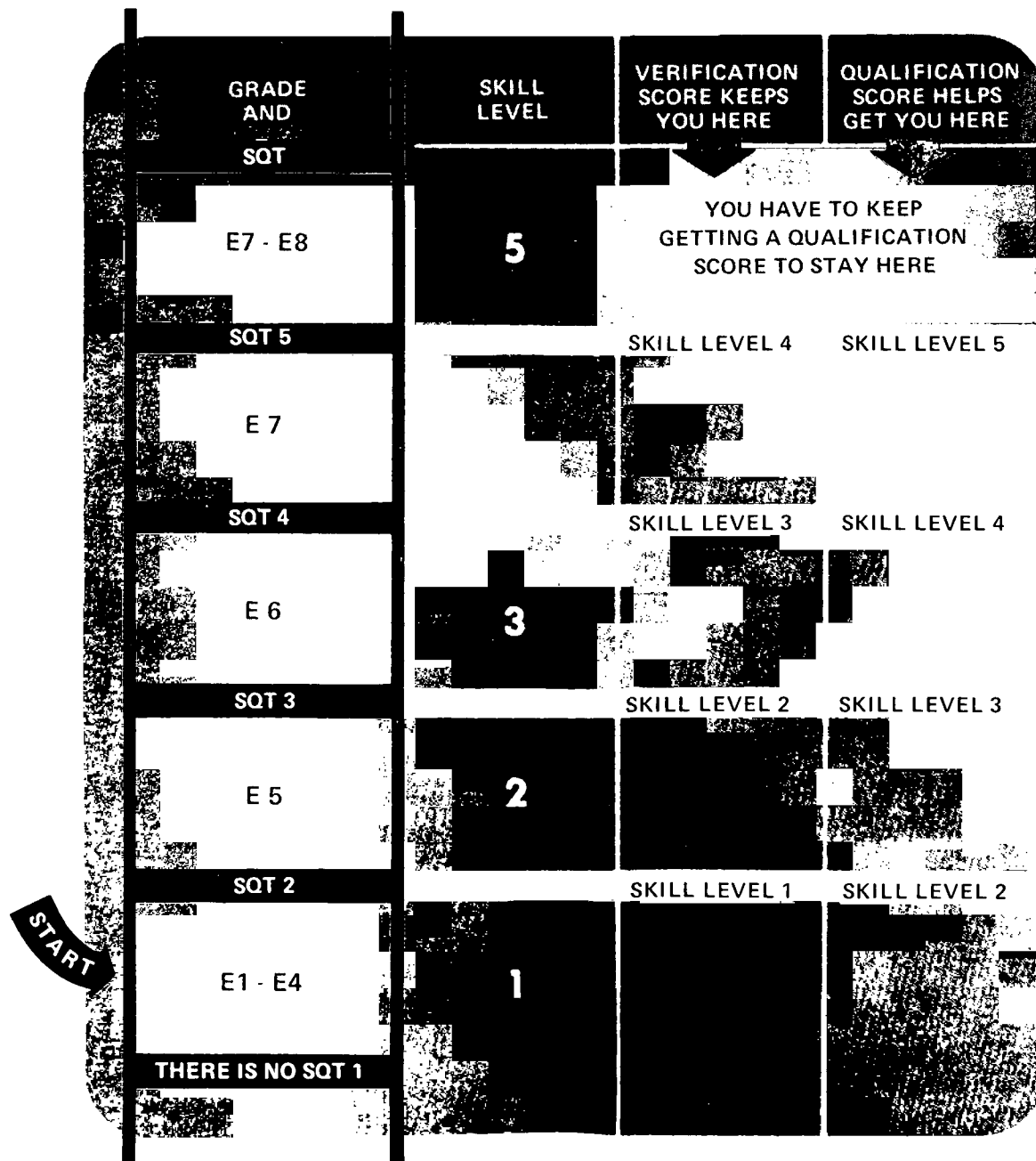
## CMF 23 PROGRESSION CHART



## EPMS PROVIDES PROMOTION POTENTIAL

Under EPMS you are awarded promotion points for the training you have received. This includes civilian and military schools, as well as correspondence courses. You will also receive promotion points for your SQT score and your EER rating. By improving yourself through self study and attendance at military and civilian schools you will greatly improve your chances of promotion.

### HOW YOUR SQT SCORE COUNTS



## EPMS HELPS 4 WAYS

- To give you a map to use as a guide to your MOS from E-1 to E-9.
- To get rid of bottlenecks in the promotion system.
- To give fair promotion chances to all enlisted personnel in the same grade and MOS.
- To combine some MOS's at the lower skill levels and other MOS's at the higher skill levels in order to give you more skills and to make you able to take more assignments.

## SUMMARY

Your Soldier's Manual provides the basic ingredient of mutual interest to you and the Army—the critical tasks that you must be able to do to be a successful soldier. Follow the step-by-step procedure outlined below and you will open the door to advancement:

Make sure you have the right Soldier's Manual and keep it in a three-ring binder.

Know your MOS, skill level, and duty position.

Go to the right sections of your Soldier's Manual to find the critical tasks that you must master.

Study and practice the critical tasks using the references listed until you are sure you have mastered them. Ask your senior NCO's and officers for help.

Once you have mastered the critical tasks for your present MOS, skill level, and duty position, prepare for your SQT by studying and practicing the critical tasks for the next higher skill level.

If you earnestly follow the above steps, you will be able to progress through a logical, challenging and rewarding Army career.

## WE NEED FEEDBACK

Your Soldier's Manual has a questionnaire you should fill out and mail back. As you use your manual check the questionnaire. When a subject comes up check it off and when the questionnaire is completed mail it in. It's postage free.



## **SAFETY CHECK LIST**

As an Improved HAWK Launcher and Electro-Mechanical Systems Repairer, MOS 24L, you'll find one of the most important things in your job is **SAFETY**. Being careful and following correct safety procedures in your work will protect not only you but your co-workers and the equipment as well.

Safety should always be uppermost in your mind while you work. And remember - NOT following safety procedures will result in a NO-GO rating when you are tested on a task during your SQT.

While a complete list of safety precautions are covered in chapter 5 of FM9-59, *Missile Support Unit Operations*, there are some dangers in your work area that require special mentioning.

### **DANGEROUS VOLTAGE**

Be sure power is off before working on electrical equipment. If you must work on energized equipment never work alone. Don't be fooled by the term "low voltage." Potentials as low as 50 volts can kill. Extremely dangerous voltages (over 500 volts) exist in much of your equipment.

### **MICROWAVE HAZARD**

Radio-frequency (rf) radiation from radar antennas and associated equipment is a potential hazard. That's because you can't tell it is harming you. When working on radar refer to the safety warnings in front of your technical manuals for possible hazards. Radiation can cause severe burns.

### **RADIATION POISONING FROM BROKEN TUBES**

Some of the electron tubes in your work area contain radioactive materials. If you are cut by one of these broken tubes it could result in a wound that won't heal properly and radioactive poisoning in your blood stream. Special first aid for radioactive contact and further medical attention is required for these wounds. Also, use special clean-up procedures where radioactive tubes have been broken. These special procedures are in the fly sheets of TM 1440-531-12-1.

### **HIGH NOISE LEVEL WHEN RADAR IS OPERATING**

When running, the liquid cooler (heat exchanger) produces dangerously loud noises. Continued exposure to this noise can cause a hearing loss unless you have ear protection. Wear protectors within ten feet of the cooler.

### **ROTATING ANTENNAS AND LAUNCHERS ARE DANGEROUS**

Stay clear of them. The launcher and radars are all slaved to other units. Unless you know what you are doing, never assume a part that can move is safe to work around. Some of the equipment has a safety switch that will make it safe. Other equipment requires a complete disconnect of all data cables regardless of the safety switch.

### **HIGH PRESSURE AIR SYSTEMS ARE DANGEROUS**

Be sure you know what you are doing when you work with high-pressure air hoses and components. Make sure your equipment is clean and in proper working order before you use it, and REMEMBER, some pneumatic lubricants can explode under pressure.

### **KNOW YOUR LIFTING CAPABILITIES AND PROPER LIFTING PROCEDURES**

Hernias and back injuries are common mishaps in your MOS and both are hard to repair.

### **DANGER - MISSILES WILL EXPLODE**

Intercept-aerial guided missiles MIM-23B-1 and MIM-23B-2 contain explosives. All applicable safety regulations will be strictly enforced. Protect at all times explosive components containing electrical wiring from stray voltages or induced electrical currents.

Do not perform operations during electrical storms.

### **CARBON MONOXIDE IS DEADLY**

Operate vehicles and generators in well-ventilated areas.

### **FUEL VAPORS ARE EXPLOSIVE**

Refuel only in well-ventilated areas with the engine off.

### **CLEANING SOLVENTS ARE HAZARDOUS**

Avoid breathing the fumes of cleaning solvents. Clean only in a well-ventilated area. Some solvents may loosen adhesives. Other solvents may damage or destroy plastic or rubber components.

### **USE COMMON SENSE**

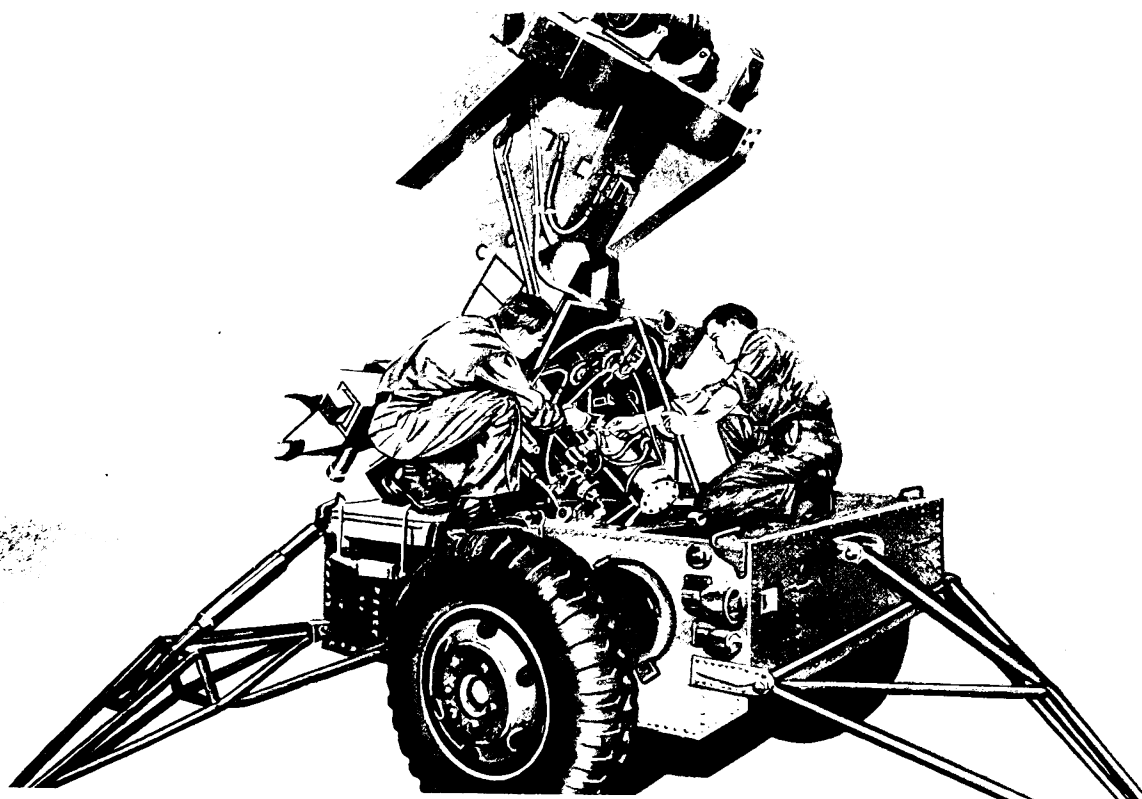
There are no shortcuts to safety. If you're not sure about something find out. Be safe. Don't be sorry.

FM 9-24L1/2

NOTES

## Chapter 2      COMMON TASKS

### SECTION I



TASKS FOR SKILL LEVEL 1

# PART 1

## TASKS FOR ALL SOLDIERS

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081-831-1004

PERFORM MOUTH-TO-MOUTH RESUSCITATION AND EXTERNAL CARDIAC MASSAGE

- CONDITIONS: Given an unconscious casualty who has stopped breathing and has no heartbeat.
- STANDARDS: Properly apply mouth-to-mouth resuscitation and external massage until the casualty resumes breathing or until you are relieved.
- PERFORMANCE MEASURES:
1. Restore breathing (artificial respiration).
- NOTE: This method is used except when soldier has a crushed face or is in toxic environment.
- a. With soldier lying on back, position yourself at side of his head.
  - b. Place one hand behind his neck to keep his head in a face-up, tilted-back position. Pinch his nostrils with thumb and index finger of other hand and let same hand press on his forehead to keep head tilted backward.
- NOTE: For adults: First 4 breaths - Full and quick; thereafter - 1 every 5 seconds.  
For children: Puffs of air from cheeks.



081-831-1004 (continued)

- c. Take deep breath and place mouth (in airtight seal) around soldier's mouth; then blow forcefully as you observe his chest. (If it is clear that the casualty's mouth is full of debris, remove the debris first.) If after blowing forcefully his chest does not rise, adjust his jaw and blow harder, making sure air is not leaking from his mouth or nose. If chest still does not rise, turn his head to one side, run your fingers down inside of lower cheeks, over base of tongue, and across back of throat to remove vomitus, mucus, or foreign bodies. If airway is still not clear, roll him onto his side; using heel of hand, deliver sharp blows between his shoulder blades to dislodge foreign body.
- d. When soldier's chest rises, remove your mouth from his mouth and listen for return of air from his lungs. If returning air is noisy, lift his jaw.
- e. After each exhalation of air, pinch his nose again and blow another deep breath. First 4 breaths should be full and quick (except for children); thereafter, the rate is once every 5 seconds. Insure adequate ventilation on each breath by observing his chest rise and fall and by hearing and feeling air from his lungs.
- f. As soldier starts to breathe, adjust timing to assist him. (If abdomen bulges, apply gentle pressure on abdomen with hand at frequent intervals between inflations.)

NOTE: The mouth-to-nose method is performed in the same way except you blow into his nose while you pinch his lips closed with one hand.

## 2. Restore heartbeat (closed-chest heart massage).

NOTE: (To keep blood flowing to brain and other vital organs until heart begins beating normally again.)

- a. Prepare soldier for artificial respiration. (Breathing stops before or soon after heart stops.) Place him on solid surface. Elevate his legs about 6 inches by placing his pack or other suitable object under his feet.



081-831-1004 (continued)

- b. Position yourself close to his side. Place heel of one hand on lower half of breastbone with fingers spread and raised. Place other hand on top of first hand. (Use only one hand for child and only fingers for infant.)
  - c. Bring shoulders directly over breastbone: keep arms straight; press breastbone down only 1-1/2 to 2 inches. (More than 2 inches may fracture breastbone. If child or infant, press only lightly.)
  - d. Release pressure immediately, keeping hands in place.
3. Restore breathing and heartbeat - keeping one rescuer (closed-chest heart massage with artificial respiration).
- a. Give 4 quick inflations of the lungs (see para 1).
  - b. Compressions (see para 2) - 80 per minute. (This rate allows for time lost when giving breaths to the casualty.)
  - c. Inflations - 2 (quick but full) after each 15 heart compressions (15:2 ratio).
  - d. Timing - Count aloud: 1 and 2 and 3 and 4 and 5 and, 1 and 2 and 3 and 4 and 10 and, 1 and 2 and 3 and 4 and 15.
  - e. Compress and say the numbers. Release and say "and". Blow after count of 15 two deep breaths into airway in rapid succession without allowing full return of air. Repeat count and continue resuscitation.
4. Restore breathing and heartbeat - two rescuers (closed-chest heart massage with artificial respiration).
- a. One person positions himself at the casualty's side and performs closed-chest heart massage. The other person positions himself on the opposite side of the casualty at his head, keeps the casualty's head tilted back, and administers artificial respiration.

081-831-1004 (continued)

- b. The person who is administering closed-chest heart massage should compress the heart once every second (60 compressions per minute) by counting, one thousand one, one thousand two, etc.
- c. The person who is performing artificial respiration quickly blows into the casualty's lungs after each five compressions (5:1 ratio).
- d. When one rescuer becomes fatigued, he can switch positions with the other rescuer without any significant interruption of the 5:1 rhythm.

REFERENCES: FM 21-11, First Aid for Soldiers (chap 3, p 11 thru 28)  
TC 21-11, Pocket Medic (part 1, p 12 thru 13 and  
16 thru 19)

081-831-1005

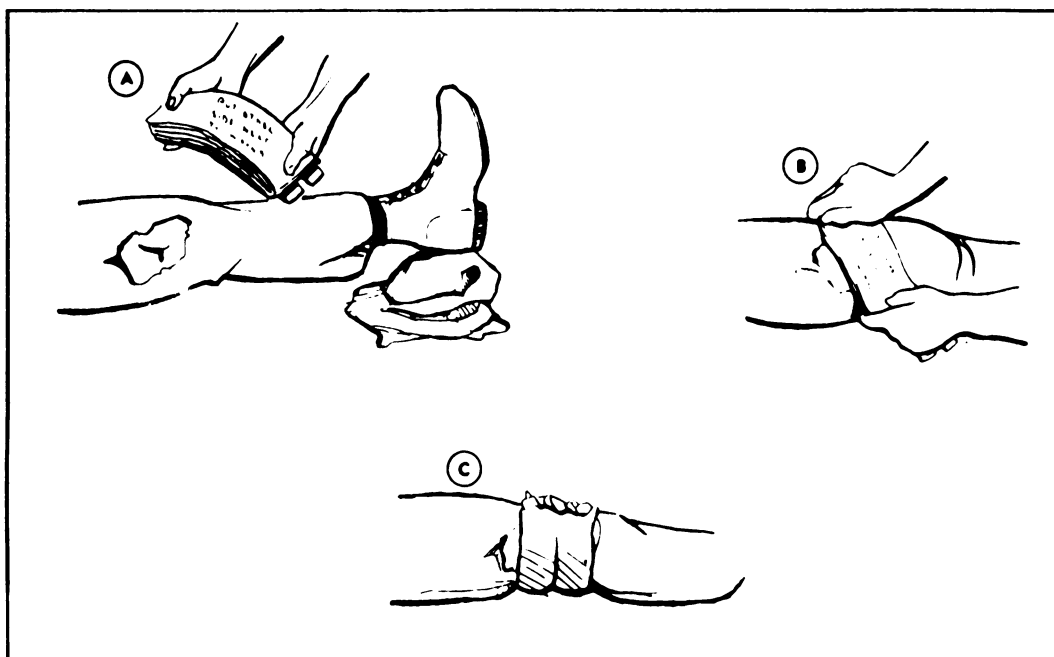
## STOP BLEEDING

**CONDITIONS:** Given a casualty who is conscious, has an adequate airway, and is breathing. The casualty has no fractures, but has a bleeding wound.

**STANDARDS:** Wound is treated in accordance with training guidance until bleeding is stopped or controlled.

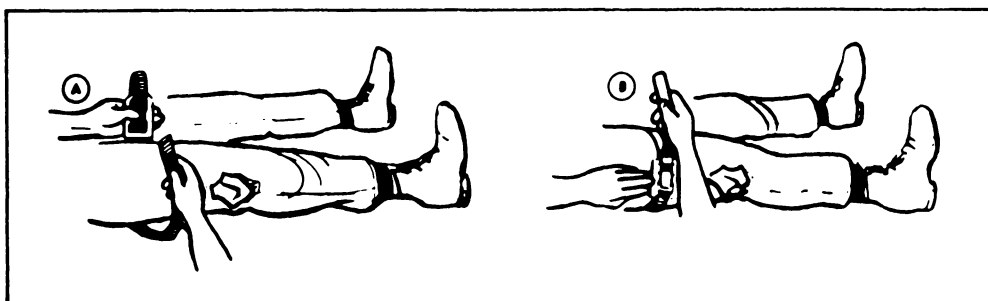
**PERFORMANCE MEASURES:**

1. **Pressure dressing:** Apply a first-aid dressing to the wound without contaminating the dressing or further contaminating the wound. Application of a first aid dressing is the preferred method for stopping the bleeding. (Detailed instructions for applying the dressing are on the packaging of the dressing.) If bleeding continues after tying the tails of the dressing over the wound, apply pressure with a hand over the bandage until the bleeding stops. (Pressure may be required for as long as 5 to 10 minutes.)



## 081-831-1005 (continued)

2. Elevation: Raising injured part above level of heart lessens bleeding. Use the casualty's helmet, pack, a rock, or other suitable item. Elevation is not used if there is a broken bone.
3. Tourniquet: (Refer to TC 21-11, p 26 thru 27). If bleeding continues after the pressure dressing has been applied, then use a tourniquet as a last resort. Apply it between the wound and where the limb is attached to the body. Place it 2 to 4 inches above the injury, not over wound or fracture. Never loosen or remove a tourniquet once you have applied it. If possible, mark a T on soldier's forehead and time you applied tourniquet. Get him to medical treatment facility as soon as possible.
  - a. Make a loop around the limb with any flexible material; tie with square knot. When possible, place the tourniquet over the smoothed sleeve or trouser leg to prevent the skin from being pinched or twisted. Protection of the skin also reduces the amount of pain inflicted on the casualty.
  - b. Pass a stick, scabbard, or bayonet under the loop.
  - c. Tighten tourniquet just enough to stop arterial bleeding.
  - d. Bind free end of stick to limb to keep tourniquet from unwinding.



## REFERENCES:

FM 21-11, First Aid for Soldiers (chap 4, p 29 thru 35)  
TC 21-11, Pocket Medic (p 20 thru 27)

081-831-1006

# IDENTIFY SIGNS AND TREAT FOR SHOCK

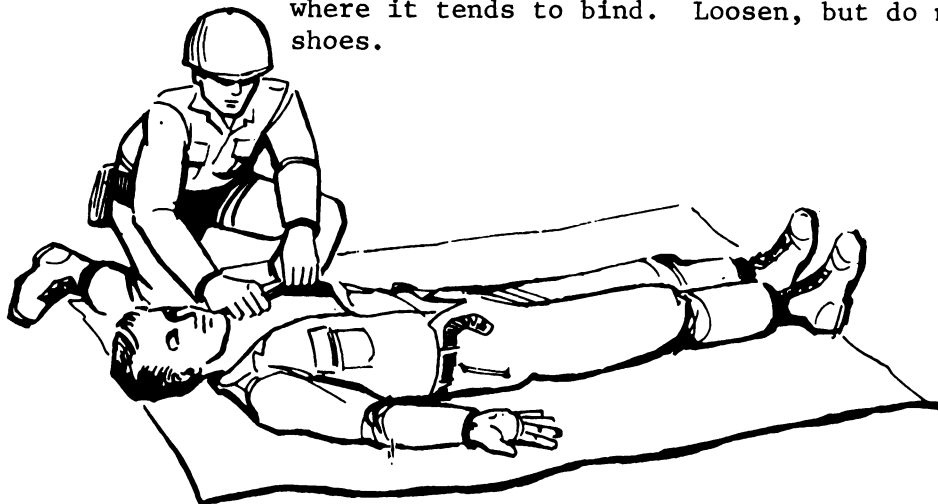
CONDITIONS: Given a casualty who shows sign of shock.

STANDARDS: Apply first aid measures to treat for shock, as described in training guidance.

PERFORMANCE MEASURES: NOTE: Shock may result from any injury but is more likely to develop in severe injuries.

| Warning signs:   | May be:                                  | Signs as shock get worse:                       |
|------------------|------------------------------------------|-------------------------------------------------|
| Restlessness     | Excited or appear calm                   | Small fast breaths or gasps                     |
| Thirst           | and tired                                |                                                 |
| Paleness of skin | Sweating when skin feels cool and clammy | Staring vacantly into space                     |
| Rapid heartbeat  |                                          | Blotchy or bluish skin, especially around mouth |

1. Maintain adequate respiration and heartbeat. This may entail only clearing soldier's upper airway, positioning him to insure drainage of any fluid blocking airway, and observing him to insure airway remains clear. However, you may need to give him artificial respiration and closed-chest heart massage.
2. Stop bleeding.
3. Loosen clothing at neck, waist, and other places where it tends to bind. Loosen, but do not remove shoes.



081-831-1006 (continued)

4. Show by your calm self-confidence and gentle yet firm actions that you know what you are doing and that you expect him to feel better because you are helping him. If he asks questions about the seriousness of his injury, explain that a physician will have to examine him to determine the extent of injury. Ill-timed or incorrect information can increase a person's anxiety.
5. Splint fractures.
6. Position soldier. If conscious -- On back with feet raised 6" to 8". If unconscious -- On side or abdomen with head turned to side. Vary position for: Head injury -- Head also raised higher than body. Face and neck wound -- Sit, lean forward with head down or in unconscious position. Sucking chest wound -- Lie on injured side. Abdominal wound -- On back with head turned to side.
7. Keep soldier comfortably warm. Place suitable material (poncho, blanket, etc.) under him as well as over him if necessary. If weather permits, remove any wet clothing except boots.

## REFERENCES:

FM 21-11, First Aid for Soldiers (chap 5, p 36 thru 39)  
TC 21-11, Pocket Medic (part 1, p 28 thru 29)

081-831-1007

### SPLINT A FRACTURE

- CONDITIONS: Given casualty who has a fracture, material available for improvised splints. Necessary life-saving measures have already been performed.
- STANDARDS:
1. Joints above and below the fracture are immobilized.
  2. Circulation is not impaired by splinting.
  3. Splinting is done without moving the individual.
  4. Splinting is done without any change in the position of the fractured part.
- PERFORMANCE MEASURES:
1. Collect splinting materials. Splints may be improvised from such items as boards, poles, sticks, tree limbs, unloaded rifles, etc. Padding may be improvised from such items as a jacket, blanket, poncho, shelter half or leafy vegetation.
  2. Apply padding if available between injured part and splint. If no padding is available, splint anyway.
- NOTE: Do not cover the fracture with the padding material.
3. Apply the splint. Splint should extend past the joints above and below the fracture.
- NOTE: Do not move the individual and do not attempt to change the position of the fractured part.
4. Bind the splint.
    - a. All knots must be against the splint.
    - b. Bindings must be placed both above and below the fracture.
- NOTE: Blood circulation must not be impaired by splint, padding, or bindings.
- NOTE: Do NOT place bindings across the fracture.
5. Cover any wound or bone sticking through the skin with a clean dressing as you would any other wound. Stop any bleeding.
- REFERENCES: FM 21-11, First Aid for Soldiers (chap 8, p 66 thru 67)  
TC 21-11, Pocket Medic (part 2, p 44 thru 48)

081-831-1008

## ADMINISTER EMERGENCY MEDICAL CARE FOR BURNS

- CONDITIONS: In a field location, given a casualty with a burn, sodium chloride - sodium bicarbonate mixture (salt packet), two sterile dressings, and a canteen of cool water. The casualty is conscious and is not vomiting, and has no other wounds.
- STANDARDS: Within 5 minutes:
1. Place a sterile dressing over burn.
  2. Administer as directed in step 2 of the performance measures cool water or the sodium chloride-sodium bicarbonate mixture.
- PERFORMANCE MEASURES:
1. Protect the burn against further contamination as follows to lessen the possibility of infection:
    - a. If clothing covers the burn, cut and lift it gently away without touching the burn.
      - (1) Do not try to remove pieces of cloth which have stuck to the burn, or to clean the burn in any way.
      - (2) Do not pull clothes over the burned area.
      - (3) Do not break blisters.
      - (4) Do not put ointment or any medication whatsoever on the burn.
    - b. Place a sterile dressing over the burned area and secure it in place with bandages.
  2. Preventing shock:
    - a. If size of burn is less than one square foot, have the casualty drink the water from his canteen.
    - b. If size of burn is over one square foot and the casualty is conscious, is not vomiting, and has no abdominal or neck wound, give him the sodium chloride bicarbonate mixture included in the first-aid kit. Dissolve one envelope (4.5 grams) of the mixture in one canteenful or quart of cool or cold water. Never use warm water, as this often causes vomiting. Give the solution to the casualty slowly, having him consume the entire amount over a 1-hour period. Should the casualty become nauseated, stop giving him the solution.



081-831-1008 (continued)

3. Get the casualty to a medical treatment facility as soon as possible.

REFERENCES: FM 21-11, First Aid for Soldiers, (chap 7, p 61 thru 62)  
TC 21-11, Pocket Medic (part 2, p 43)  
TEC Lesson 911-441-0033-F, Burns and Eye Injuries

081-831-1010

## APPLY FIRST AID FOR SUN OR HEAT INJURIES

- CONDITIONS:** Given a casualty suffering from a heat injury, (heat cramps, heat exhaustion, heat stroke), a canteen of water, and a field first aid case containing two envelopes of sodium chloride-sodium bicarbonate mixture.
- STANDARDS:** Casualty's signs and symptoms are identified in accordance with the training guidance and initial care is begun immediately to reduce severity of injury.
- PERFORMANCE MEASURES:** Identify type of injury.
1. Heat cramps.
    - a. Signs/symptoms - Muscle cramps of abdomen, legs, or arms.
    - b. First aid.
      - (1) Move casualty to shade and loosen clothing.
      - (2) Give him large amounts of cool salt water slowly. Prepare salt water by dissolving one envelope of sodium chloride-sodium bicarbonate mixture in one canteen of cool water.
  2. Heat exhaustion.
    - a. Signs/symptoms - Headache, excessive sweating, weakness, dizziness, nausea, muscle cramps. Pale, cool, moist, clammy skin.
    - b. First aid.
      - (1) Lay casualty in cool shaded area and loosen his clothing.
      - (2) Get the casualty to a medical treatment facility as soon as possible.
- NOTE:** For isolated units: if he is conscious, have him drink 3 to 5 canteenfuls of cool salt water during a period of 12 hours. Prepare salt water as described for "heat cramps."

081-831-1010 (continued)

3. Heat stroke (sunstroke).

- a. Signs/symptoms - Stoppage of sweating (hot, dry skin). Collapse and unconsciousness may come suddenly or may be preceded by headache, dizziness, fast pulse, nausea, vomiting, and mental confusion.
- b. First Aid.
  - (1) Promptly immerse person in coldest water available. Add ice, if available, to water. If you cannot immerse him, get him into shade, remove his clothing, keep his entire body wet by pouring water over him, and fan his wet body continuously.
  - (2) Transport him to nearest medical facility at once, cooling his body on the way.
  - (3) If he becomes conscious, give him cool salt water prepared as described for "heat cramps."

NOTE: If casualty becomes nauseated, stop giving him the solution but keep it available for him to drink later.

REFERENCES:

FM 21-11, First Aid for Soldiers (chap 9, p 84 and 88 thru 90)  
TC 21-11, Pocket Medic (part 3, p 59 thru 60)

081-831-1011

## APPLY FIRST AID FOR WET OR COLD INJURIES

- CONDITIONS: Given a casualty suffering from a cold injury, (frostbite, immersion foot, trench foot, snow blindness).
- STANDARDS: Casualty's signs and symptoms are identified in accordance with the training guidance, and initial care is begun immediately to reduce severity of injury.
- PERFORMANCE MEASURES: Identify type of injury.
1. Frostbite.
    - a. Signs/symptoms - Skin is white, stiff, and numb.
    - b. First Aid -
      - (1) Cover frostbitten part of face with warm hands until pain returns.
      - (2) Place frostbitten bare hands next to skin in opposite armpits.
      - (3) If feet are frostbitten, seek sheltered area and place bare feet under clothing and against abdomen of another person.
      - (4) If deep frostbite is suspected, protect part from additional injury and get to medical treatment facility by fastest means possible. DO NOT attempt to thaw deep frostbite. There is less danger of walking on feet while frozen than after thawed.
  2. Immersion foot.
    - a. Signs/symptoms - Soles of feet are wrinkled. Standing or walking is extremely painful.
    - b. First Aid -
      - (1) Dry feet thoroughly and get to medical treatment facility by fastest means possible.
      - (2) Avoid walking if possible.
  3. Trench foot.
    - a. Signs/symptoms - Numbness. May be tingling or aching sensation, cramping pain, and swelling.

081-831-1011 (continued)

b. First Aid -

- (1) Dry feet thoroughly and get to medical treatment facility by fastest means possible.
- (2) Avoid walking if possible.

4. Snow blindness.

a. Signs/symptoms - Scratchy feeling in eyes.

b. First Aid -

- (1) Cover eyes with dark cloth.
- (2) Transport casualty to medical treatment facility at once.

REFERENCES: FM 21-11, First Aid for Soldiers (chap 9, p 90 thru 91)  
TC 21-11, Pocket Medic (part 3, p 61)

091-503-1001

## MAINTAIN PROTECTIVE MASK AND ACCESSORIES

- CONDITIONS: Given an ABC-M17A1 protective mask with accessories and items authorized to be stored in the carrier (per unit SOP), a pail of soapy water, a pail of clear water, several rags, a small brush, a dry lint-free cloth, and TM 3-4240-279-10.
- STANDARDS: Within 15 minutes:
1. Make a visual inspection of mask, accessories, and authorized items and note all discrepancies, correcting those not requiring higher-echelon support.
  2. Using procedures outlined in TM 3-4240-279-10, mask and carrier will be free of dirt, sand, and grit.
- PERFORMANCE MEASURES:
1. Inspecting Mask and Carrier.
    - a. Remove the mask from the carrier and check to insure that only authorized items are stored in the carrier.
    - b. Check the carrier for superficial dirt, mildew, rips, torn straps, and missing hardware.
    - c. Check the facepiece for holes, tears, splits, and signs of deterioration of rubber parts.
    - d. Check the filter elements to make sure that they are serviceable and properly installed.
    - e. Check the head harness for dirt and mildew; worn, frayed, or broken straps; and missing clinch tips.
    - f. Notify your supervisor of any damage that calls for repair or replacement of parts.
  2. Cleaning the Mask (Without Removing Filter Elements).
    - a. Do not remove the hood if it is assembled to the mask.
    - b. Remove the voicemitter-outlet cover, inlet valve caps, and eye-lens outserts.
    - c. Clean the mask inside and out with a cloth dipped in warm, soapy water (wrung almost dry) or a brush with soft bristles, being careful not to wet the filter elements.
    - d. Rinse with a cloth dipped in warm, clear water (wrung almost dry).

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- e. Wipe the facepiece with a clean, lint-free cloth, or air-dry.
- f. If the nose cup valve disks become detached while the mask is being cleaned, reinstall them and reassemble the mask.

3. Cleaning the Carrier.

- a. Empty the carrier pockets.
- b. Brush the carrier both inside and outside to remove sand or grit.
- c. If the carrier becomes soiled, clean it with a brush dipped in clear, cold water.

REFERENCES:

FM 21-40; Chemical, Biological, Radiological, and Nuclear Defense (chap 4, sec I, p 4-4 thru 4-6)  
TM 3-4240-279-10; Mask, Chemical-Biological Field, ABC-M17A1, M17 and Accessories (chap 3, p 3-1 thru 3-14)  
TEC Lesson 931-061-0065-A, NBC: Maintenance of the M17 Series Mask

091-503-1002

## PUT ON A PROTECTIVE MASK

- CONDITIONS:** In a field location, wearing a protective mask carrier containing a prefitted M17 protective mask, exposed to CS gas without warning.
- STANDARDS:** Put on the protective mask within 9 seconds of the chemical alarm (if present, the protective hood must be secured under the arms within an additional 6 seconds) and remain in the contaminated area for at least 2 minutes without making further adjustments to the mask.
- PERFORMANCE MEASURES:**
1. Upon becoming aware of a chemical-biological attack, stop breathing, remove headgear, and open the carrier with the left hand. (Headgear may be placed between the legs or on the muzzle of a rifle held between the legs. This is important in a contaminated area and should be practiced in training. If dropped, however, continue to mask and decontaminate the equipment afterward.)
  2. Hold the carrier open with one hand and with the other grasp the mask just below the eyepieces and remove the mask.
  3. Grasp the facepiece with both hands, sliding the thumbs up inside, so that the facepiece is open to to the fullest extent.
  4. Place chin in the chin pocket, then pull the head harness over the head, making sure that all head straps are straight and the head pad is centered.
  5. Smooth the edges of the facepiece on the face with an upward and backward motion of the hands, pressing out all bulges to get an airtight seal.
  6. Clear the mask (M17) by placing the palm of one hand over the bottom of the outlet valve cover and blowing hard to clear any agent inside the mask. Clearing the M17A1 also requires covering the voicemitter assembly with the other hand.
  7. Check for leaks by placing the palms of the hands over the two inlet valve assemblies and breathing in slowly. If there are no leaks, the facepiece will collapse against the face.
  8. Secure the protective hood by placing the straps under arms and attaching the straps to the front of the hood.
  9. Replace the headgear.



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REFERENCES:

- FM 21-40; Chemical, Biological, Radiological, and Nuclear Defense (app B, sec I, p B-1)
- FM 21-41, Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare (app II, p 135 thru 136)
- TEC Lesson 931-061-0060-F, NBC: The Mask
- TEC Lesson 931-061-0061-F, NBC: Masking and When To Do It

091-503-1003

## TAKE COVER AS PROTECTION AGAINST NBC HAZARDS

CONDITIONS: During daylight, in a field location:

## Situation 1.

You are providing security near an uncompleted foxhole, a shelter half is lying beside the position, and you have just been warned that a spray or large-scale chemical attack is imminent.

## Situation 2.

You are told to expect a nuclear attack in your area. There is no available cover near your location so you start walking toward a culvert approximately 50 meters from where you are located. The attack suddenly occurs before you can reach the culvert.

## STANDARDS:

## Situation 1.

Within 2 minutes - Immediately mask, get in the position, and cover the top.

## Situation 2.

Immediately fall flat on the ground with your head away from the direction of the explosion, and cover your hands and face.

PERFORMANCE  
MEASURES:

There may be little or no warning before an NBC attack.

## 1. Chemical and Biological Attacks.

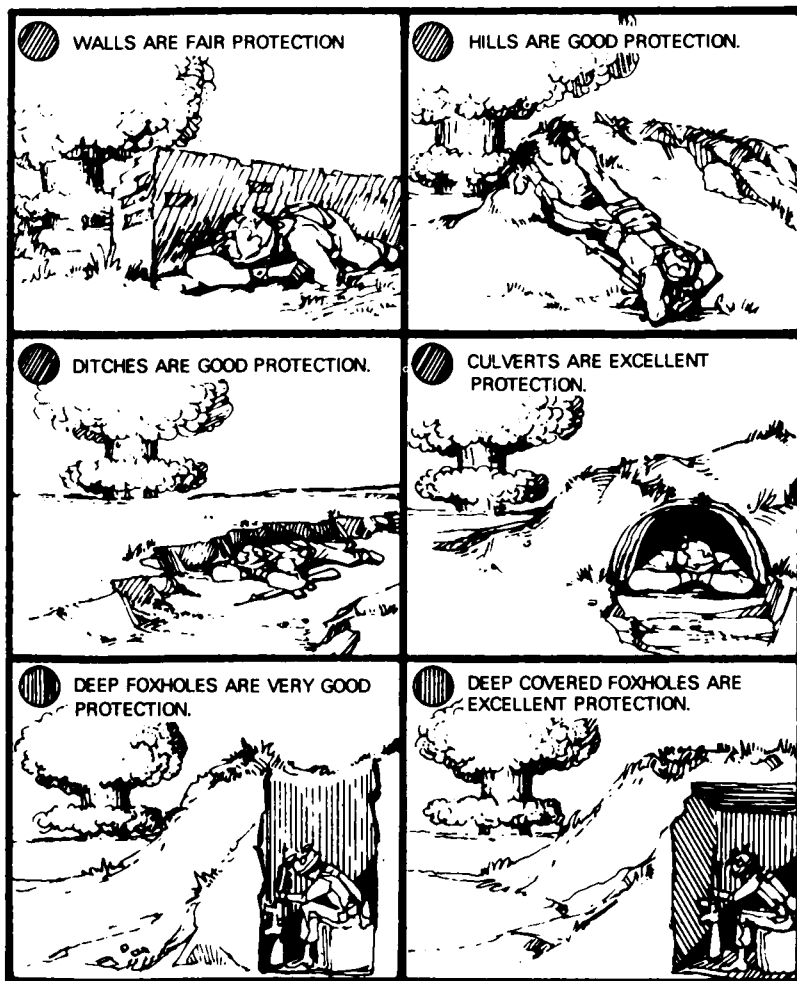
- a. Wear your protective mask during a chemical attack and remain masked until told to unmask (unit SOP).
- b. Seek position with overhead cover.
- c. If possible, cover yourself with a shelter half or poncho.
- d. Cover as much of your body as possible.

## 2. Nuclear Attacks.

- a. When nuclear explosion occurs, drop flat on your stomach at once.
- b. When caught in the open with no available shelter, fall flat on the ground with your head facing away from the explosion and cover your face and hands. A man who is flat on the ground is better protected than a standing man.

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c. Figure 1 shows degrees of various types of protection from a nuclear explosion.



REFERENCES:

- FM 21-40; Chemical, Biological, Radiological, and Nuclear Defense (chap 6, p 6-1 thru 6-2)
- FM 21-41, Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare, C.1 (chap 4, sec II, p 106 thru 118)
- FM 21-75, Combat Training of the Individual Soldier and Patrolling (chap 6, p 64 thru 67)
- TEC Lesson 931-061-0064-F, Individual Protection and Decontamination

091-503-1004

## DECONTAMINATE SELF AND INDIVIDUAL EQUIPMENT

**CONDITIONS:** During daylight, in a field location, wearing field clothing, load-bearing equipment (LBE), protective mask with accessories (ABC-M13 or M258 decontamination kits), and carrying individual weapon. You have been hit with a chemical spray attack of an unidentified chemical agent. After masking, you notice that the agent has landed on your hand, clothing, and weapon.

**STANDARDS:** Within 5 minutes, move to a covered position and accomplish the following:

1. Immediately decontaminate chemical agent in eyes by flushing with water from canteen (if necessary).
2. Decontaminate skin with skin pad in the ABC-M13 kit.
3. Detect and decontaminate areas of clothing using powder from the ABC-M13 kit.
4. Dust powder from clothing decontamination bag in the ABC-M13 kit on weapon and other load-bearing equipment.

**PERFORMANCE  
MEASURES:**

1. Decontaminate Self.
  - a. Decontamination of Eyes and Face. If your eyes or face have been contaminated (for example, from a spray attack), you must immediately try to obtain overhead cover, if mission so permits, before attempting to decontaminate yourself. You need shelter to protect yourself from possible additional contamination during the decontamination process. Decontaminate:
    - (1) Your eyes by turning the face upward and using water from the canteen to repeatedly flush the eyes.
    - (2) Your skin by using the skin pad from the M13 kit or the M258 kit. If necessary, use the M13 kit skin pad to decontaminate the inside of the protective mask that comes in contact with the skin.
  - b. Decontamination of Other Exposed Skin. If skin other than the face has been contaminated, decontaminate with the skin pad from the M13 kit or soap and water.

091-503-1004 (continued)

2. Decontaminate Equipment.

- a. Protective Mask. The external parts of the mask are decontaminated with the cloth bag from the M13 kit; the interior surface of the mask is decontaminated with the skin pad from the M13 kit.
- b. Clothing. Clothing contamination is detected by using the cloth bag from the M13 kit after the dye capsule has been crushed. Use the cutter from the M13 kit to remove spots larger than one-eighth inch from the clothing.
- c. Boots. Treat with vesicant gas-resistant leather dressing after washing with soap and water.
- d. Individual Metal Equipment. Helmets and intrenching tools are decontaminated with DS2, soapy water, or the cloth bag from the M13 kit.
- e. Individual Weapons. Decontaminate weapons and ammunition with the cloth bag from the M13 kit. After decontamination, weapons are disassembled, washed, rinsed, dried, and oiled to prevent corrosion.
- f. Web Equipment. If lightly contaminated, decontaminate as in a. above. Equipment that is heavily contaminated with chemical agents is destroyed and replaced. (Destruction will be only on order of the company commander or higher authority.)

REFERENCES: FM 21-40; Chemical, Biological, Radiological, and Nuclear  
Defense (chap 4, sec IV, p 4-15 thru 4-16)  
TEC Lesson 931-061-0064F, Individual Protection and  
Decontamination

081-831-1012

## ADMINISTER ANTIDOTE TO A NERVE-AGENT CASUALTY

- CONDITIONS: While wearing a protective mask, given a training automatic injector and a casualty with nerve-agent symptoms (described or simulated) (casualty may be tested soldier).
- STANDARDS: Within 30 seconds, recognize nerve-agent symptoms, inject casualty (self) with antidote (simulated), and massage injection area.
- PERFORMANCE MEASURES:
1. Recognize symptoms of nerve-agent poisoning: flushed skin with local sweating and tremors, or tightness of chest and pin-pointing of pupils of the eye (tested soldier would recognize this as dimness of vision).
  2. Mask, if not already masked.
  3. Remove yellow safety cap from injector.
  4. Place green end of injector against casualty's thigh (or other large muscle) and push until injector functions.
  5. Massage the injection area.
  6. Attach expended injector to casualty's shirt collar by bending needle through material.
  7. Mask the casualty.
  8. Repeat steps 3, 4, 5, and 6 at 5 minute intervals.
- NOTE: Administer no more than two injectors total. This applies to the new antidote as opposed to atropine.
- REFERENCES:
- FM 21-11, First Aid for Soldiers (chap 11, p 129)  
FM 21-40; Chemical, Biological, Radiological, and Nuclear Defense (chap 4, sec III, p 4 thru 13)  
FM 21-41, Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare, C.1 (chap 2, sec III, p 63 thru 69)  
TEC Lesson 931-061-0062-F, NBC: First Aid, Part 1

081-831-1009

APPLY ARTIFICIAL RESPIRATION TO A CHEMICAL-AGENT CASUALTY

CONDITIONS: During daylight or darkness, in a contaminated area, wearing a field protective mask with M1 resuscitation tube, and an unconscious chemical-agent casualty (a dummy may be used for training).

STANDARDS: 1. Clear the casualty's upper air passage.  
2. Apply artificial respiration until the casualty begins to resist resuscitation.  
3. Mask the casualty.

PERFORMANCE MEASURES: Use of M1 resuscitation tube.

1. Place the casualty on his back. Stretch the front of the neck by lifting up on his chin with one hand; push the back of his head down as far as it will go with the other hand.
2. While holding the casualty's chin up, open his mouth and remove loose dentures (if any). Insert a finger and clean out any foreign matter or mucus that may be in his mouth.
3. Insert the resuscitation mouthpiece between the casualty's lips and teeth. Completely surround the edge of the mouthpiece with his lips.
4. Hold the mouthpiece in place by putting the thumb and index finger over the outside of the casualty's lips and hooking the remaining fingers under his chin (fig. 1).
5. Pinch the casualty's nostrils closed. Take a deep breath and blow into the breathing tube mouthpiece until the casualty's chest appears to rise. Relax the pressure on the casualty's nostrils and allow him to exhale. Repeat this procedure at a rate of approximately 12 times a minute until the casualty is able to breathe for himself.

NOTE: When a casualty begins to breathe for himself, he will automatically resist resuscitation efforts.

6. When the casualty can breathe normally, have him hold his breath for masking.
7. Remove the resuscitation mouthpiece from the casualty's mouth and put a mask on his face.

081-831-1009 (continued)

8. Remove the resuscitation tube from your mask. Wipe the resuscitation mouthpiece as clean as possible and wash it as soon as conditions permit.



*Figure 1.*

REFERENCES:

FM 21-11, First Aid for Soldiers (chap 11, p 130 thru 134)  
TM 3-4240-279-10; Mask, Chemical-Biological Field, M17A1  
and M17 and Accessories (chap 2, p 2-18 thru 2-21)  
TEC Lesson 931-061-0063-F, NBC: First Aid, Part 2



091-503-1007

DETERMINE PERSONNEL NEEDS AND PERSONNEL HYGIENE IN A CHEMICAL ENVIRONMENT

- CONDITIONS: Given the absence of command guidance and dressed in full chemical protective clothing/equipment.
- STANDARDS: Demonstrate procedures for drinking water, eating, sleeping, shaving, bathing, changing clothing, and defecating and urinating while wearing chemical protective clothing/equipment in a chemical environment.
- PERFORMANCE MEASURES:
1. Chemical protective clothing. The protective shirt may be worn open to permit ventilation or closed to provide complete protection.
  2. Protective mask and hood. The protective mask may be worn with the hood open and rolled up to provide ventilation or closed to provide complete protection.
  3. Drinking water and eating. Personnel in a chemical environment normally will drink water individually, as required, but normally will be fed under unit control.
    - a. Drinking water. With training, individuals equipped with the M17A1 protective mask will run minimum risk of becoming a chemical casualty if they use the drinking device to drink water from their canteens. Normally, drinking from and refilling the canteen in an area contaminated with a chemical agent that does not present a vapor hazard can be performed with only minor decontamination of the canteen cup and water spigot area. In other more hazardous situations, the unit commander makes arrangements for delivery of filled canteens with caps on, in exchange for empty ones with caps on that are collected in the contaminated areas. These empty canteens are then decontaminated and filled with fresh water. Individuals equipped with other type protective masks are instructed to drink water by an expedient method: a method is described below.
      - (1) Remove the canteen from the carrier, remove the canteen cap and, if necessary, decontaminate exposed threads with water or the skin pad from the M13 decontaminating kit.
      - (2) Take a few breaths and hold the last one.

091-503-1007 (continued)

- (3) Close the eyes, pull the protective hood up, grasp facepiece behind the outlet valve assembly of the protective mask with the free hand, and pull the facepiece out and up far enough to provide access to the mouth.
  - (4) Place the neck of the canteen to the closed lips and cant it, tilting the head back until the water reaches the lips, and then fill the mouth with water.
  - (5) Replace the facepiece, swallow the water, and then clear the mask.
  - (6) Rest and then repeat as necessary.
- b. Eating. Personnel may be fed on a rotational basis in a chemical protective shelter, if one is available. Depending on the situation, the unit commander may authorize a small percentage of personnel in his unit to remove their masks and eat, or he may remove some personnel on a selective basis to an uncontaminated area to eat.
- c. Feeding. The feeding of personnel in a chemical environment depends on the type and extent of the chemical environment and the situation. The commander has the following options:
- (1) Feeding in a contaminated area where there is also a vapor hazard. A protective shelter, such as the M51 positive pressure collective protection shelter, can be used. If the M51 shelter is used, the unit commander has the following choices, since this shelter has a capacity of about 10 individuals:
    - (a) Feed one squad at a time and rotate the squads.
    - (b) Feed two or more individuals simultaneously from each squad.
  - (2) Feeding in a contaminated area where there is no detectable vapor hazard. Groups of personnel can be fed on a rotational basis, with about 25 percent of them removing their masks at one time. This is also the method used when there is a chemical attack threat.

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- (3) Withdrawing personnel from a heavily contaminated area when there is a dangerous vapor hazard. It may be necessary to withdraw personnel to a nearby safe area or to the rear area for feeding. This method is highly dependent on the situation, the distances involved, and the availability of a clear area or of collective protection shelters.
4. Sleeping, shaving, bathing, and changing clothing. When operating continuously in a contaminated chemical environment, personnel will need to make some adjustments in their normal routine.
  - a. Sleeping. Individuals will sleep in chemical protective clothing and under overhead cover, if possible. If the hood is fitted properly and is worn correctly with the mask while sleeping, there will be very little, if any, leakage around the mask. Two individuals can use the "buddy" system to periodically check on each other.
  - b. Shaving. Individuals shave daily, if possible, to insure a good seal of the protective mask.
  - c. Bathing. Individuals bathe and change underclothing about every 2 or 3 days, if possible, to prevent skin rashes when wearing protective liners.
  - d. Changing clothing. Expendable protective overgarments may be disposed of and new ones drawn at the unit supply as prescribed, normally weekly. Reusable protective clothing is exchanged periodically to be laundered, normally every 14 days. Protective clothing is usually exchanged at a designated field bath unit, mobile bath unit, or personnel decontamination station.
5. Defecating and urinating. During the removal, opening, and closing of contaminated overgarments or while squatting over the latrine in a contaminated environment, the possibility of transferring contamination to the underclothing or exposed skin requires special precautions. For this reason, individuals dust with the cloth pad of the M13 decontamination kit the parts of the contaminated overgarments that might come in contact with the

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skin when the contaminated clothing is partially removed or opened. After the contaminated outer garments have been opened or partially removed, individuals remove the protective gloves before handling undergarments or the bare skin.

REFERENCES: FM 21-40; Chemical, Biological, Radiological, and Nuclear Defense (chap 8, p 8-2 thru 8-9)

091-503-1008

IDENTIFY NBC HAZARDS AND TAKE APPROPRIATE ACTIONS

CONDITIONS: In a field environment, during the conduct of a tactical mission against (simulated) enemy forces which have an NBC offensive capability, given your assigned weapon, TOE equipment, and protective mask with all accessories.

Situation 1.

Upon seeing:

- a. Aircraft spraying in the area.
- b. A mist, droplets, gas, or smoke.
- c. Rockets, bombs, or artillery rounds landing near your location.
- d. Nearby soldiers displaying any NBC effects.

Upon hearing:

- a. A low-flying aircraft.
- b. Explosions near your location.
- c. The sound of metal striking metal (a clanging sound).
- d. Someone shout "gas" or "mask."

Situation 2.

Upon seeing any standard NATO NBC markers.

Situation 3.

While masked, when directed to identify chemical agents.

STANDARDS:

Situation 1.

Mask, cover all exposed skin, and sound the alarm (shout "gas" and, if available, strike metal against metal). If nerve agent symptoms are encountered, inject casualty with antidote.

Situation 2.

Immediately inform your immediate supervisor.

Situation 3.

Within 5 minutes determine without error if V- or G-type nerve agents or blister agents are present and, if so, which.

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PERFORMANCE  
MEASURES:

1. Methods of delivery. Chemical and biological agents can be delivered in many ways. If you see any of the following, consider them to be an NBC hazard until proved otherwise.
  - a. Chemical agent delivery. Almost any munition (artillery shells, bombs, rockets, grenades, etc.) can contain chemical agents. In addition, aircraft can spray all agents except irritant agents which cause vomiting. Candles or pots similar to our smoke pots can also be used for delivering a limited number of agents. After delivery some chemical agents will look like drops of rain or dew or a smoke or mist. Others will be unnoticeable.
  - b. Biological agent delivery. Biological agents are those which are normally thought of as diseases (anything from the common cold to the plague). These diseases can be spread using the same delivery means listed above for chemical agents, by release of infected insects, or by being placed by hand in food or water supplies.
2. Physical effects of NBC contamination. The following effects are listed by type of agent. You need not memorize which effects apply to which agent, except for nerve agents, just recognize them as being signs of contamination so that you can protect yourself against them.
  - a. Nerve agent effects. Nerve agents are the most dangerous chemical agents because they very quickly cause casualties if inhaled or delayed casualties if absorbed through the skin. The two types of nerve agents are G-agents and V-agents.
    - (1) G-agents interfere with breathing and cause convulsions, paralysis, and death. When they are inhaled, their first effects on your body are unexplained runny nose, tightness in the chest, pinpointing of the eye pupils, and difficulty in breathing. You will not notice your own pupils pinpointing, but you may notice dimness of vision. When liquid agent is absorbed through the skin, there might be sweating and twitching in the area of the

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contamination, but the effects normally will parallel those for exposure to vapor form. These effects may not always occur or be noticed in the order given (particularly when the agent enters your body through the skin). However, they are vital warnings and must not be ignored. Without immediate decontamination and first aid, the early effects are usually followed by further difficulty in breathing, dizziness, headache, drooling, excessive sweating, stomach cramps, and involuntary urination and defecation.

- (2) V-agents affect the body in the same way it is affected by G-agents, and immediate decontamination and first aid measures are necessary.

b. Blister agent effects.

- (1) Importance. Blister agents are important because they cause disabling burns in either vapor or liquid form. The blister agents include the mustards, arsenicals, and phosgene oxime. These agents penetrate the skin very rapidly; therefore, you must protect yourself quickly to avoid injury.
- (2) Effects. Blister agents damage any exposed skin surface. Light vapor concentrations cause damage that resembles severe sunburn, and liquids and heavy vapor concentrations cause blisters. Usually, the eyes and moist areas of the body are most affected. Blister agents have greater effects on the body when the skin is warm and moist, either from physical exertion or from the weather.

- c. Blood agent effects. Blood agents cause casualties by inhalation. They act rapidly to prevent the blood from transferring oxygen to body tissue, and the lack of oxygen may cause suffocation and death. Difficult and slow, or rapid breathing normally is the first effect. Without first aid, convulsions occur and death may follow when a large amount of the agent is inhaled. Eye and nose irritation, headache, and dizziness occur when a small amount is inhaled.

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A speedy death may occur or recovery may take place in a few hours, depending on the extent of exposure. Don your mask as it will provide complete protection against blood agents.

- d. Choking agent effects. Choking agents cause casualties by inhalation. They damage the lungs, causing them to fill with fluids. This prevents oxygen from reaching the body and death may result. The more serious effects usually occur after a period of time during which there are no symptoms. Repeated small exposures over short periods of time will cause casualties. Your protective mask provides complete protection if donned before exposure.
- e. Incapacitating agent effects. The physical effects vary but may include increased heart rate, dry skin and mouth, blurred vision, and slowing activity, resulting in temporary inability to act normally. The mental effects vary but may include confusion, depression, and slowing of mental activity, resulting in temporary inability to think clearly and rationally. The protective mask provides protection against incapacitating agents if donned before exposure.
- f. Riot control agent effects.
  - (1) General. Riot control agents cause temporary irritating effects. Vomiting and tear agents are the two types of such agents. They may be used in conjunction with other agents to decrease your fighting efficiency and to lower your ability to protect yourself against other chemical agents. The protective mask will provide complete protection against these agents if donned before exposure.
  - (2) Vomiting agents. The effects of vomiting agents are vomiting, coughing, sneezing, pain in the nose and throat, nasal discharge, and tears. Headache often follows. As the effects may be delayed several minutes, there is a possibility that you may inhale enough vomiting agent to make you sick before you realize the agent is present and mask.



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- (3) Tear agents. Tear agents produce sharp, irritating pain in the eyes, resulting in an abundant flow of tears; the effects wear off quickly. For a short time you may not be able to see. CN, CN solution, and CS are tear agents. The effects of CS on the eyes are more intense than the effects of CN; and in addition, CS causes sneezing and runny nose, coughing, chest tightness, difficult breathing, and stinging of moist skin. In high concentration it may cause nausea and vomiting. CN and CS are used in training exercises to test the fit and operation of your protective mask and to prove to you that it provided complete protection against inhalation of harmful chemical agents (see fig. 1).
- g. Physical characteristics of biological agents. Biological agents are microorganisms (germs) which cause disease in man, plants, or animals or cause deterioration of material. They can enter your body through your nose, mouth, and skin, depending on the method of agent release.
  - (1) Biological agents cannot be detected by your five physical senses.
  - (2) Biological agents do not produce immediate effects on your body. The time between exposure to an agent and the beginning of disease symptoms (known as the incubation period) can vary from days to weeks, depending upon the agent used. Men exposed to equal amounts of an agent will react differently. Some may escape disease entirely, others may have very mild attacks, while still others may become seriously ill.

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| TYPE OF AGENT                                  | HOW NORMALLY DISSEMINATED | MEANS OF DETECTION <sup>1</sup>                                                                                                                | SYMPTOMS IN MAN                                                                                                                                           | EFFECTS ON MAN                                                                                                                                              | RATE OF ACTION                                                                                            | INDIVIDUAL <sup>2</sup>                                                            |                                                                                                        | PROTECTION REQUIRED                      | EQUIVALENT US AGENTS <sup>3</sup>                                                          |                                                                                                           |
|------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                                                |                           |                                                                                                                                                |                                                                                                                                                           |                                                                                                                                                             |                                                                                                           | FIRST AID                                                                          | DECONTAMINATION                                                                                        |                                          | SYMBOL/NAME                                                                                | CHARACTERISTICS IN THE FIELD                                                                              |
| A. TYPES OF ENEMY CHEMICAL AGENTS <sup>4</sup> |                           |                                                                                                                                                |                                                                                                                                                           |                                                                                                                                                             |                                                                                                           |                                                                                    |                                                                                                        |                                          |                                                                                            |                                                                                                           |
| NERVE                                          | Aerosol or vapor          | Automatic chemical agent alarm and chemical agent detector kits to detect vapors and aerosols; chemical agent detector paper to detect liquids | Difficult breathing, drooling, nausea, vomiting, convulsions, and sometimes dim vision                                                                    | Incapacitates; kills if high concentration is inhaled.<br><br>Incapacitates; kills if contaminated skin is not decontaminated in time.                      | Very rapid by inhalation; slow through skin.<br><br>Delayed through skin; more rapid through eyes.        | Give atropine injection. Artificial respiration or resuscitation may be necessary. | None needed.<br><br>Flush eyes with water; use skin pad from M13 kit or wash skin with soap and water. | Protective mask and protective clothing. | GA-Tobin<br>GB-Sarin<br>GD-Soman                                                           | Colorless                                                                                                 |
|                                                | Liquid Droplet            |                                                                                                                                                |                                                                                                                                                           |                                                                                                                                                             |                                                                                                           |                                                                                    |                                                                                                        |                                          | VX<br>Thickened C-agent                                                                    |                                                                                                           |
| BLISTER                                        | Liquid droplet            |                                                                                                                                                | Mustard, nitrogen mustard no early symptoms. Lewisite, mustard lewisite searing of eyes and stinging of skin. Phosgene oxime irritation of eyes and nose. | Blistering; skin, is destructive to upper respiratory tract; can cause temporary blindness. Some agents sting and form welts on skin, and others wear eyes. | Blistering delayed hours to days; eye effects more rapid. Mustard lewisite and phosgene oxime very rapid. | None                                                                               | Flush eyes with water; use skin pad from M13 kit or wash skin with soap and water.                     | Protective mask and protective clothing. | M-Mustard<br>WH-Nitrogen mustard<br>L-Lewisite<br>HL-Mustard lewisite<br>CX-Phosgene oxime | Pale yellow droplets<br>Dark droplets<br>Dark, oily droplets<br>Dark, oily droplets<br>Colorless droplets |
| BLOOD                                          | Vapor (gas)               |                                                                                                                                                | Convulsions and coma                                                                                                                                      | Incapacitates; kills if high concentration is inhaled.                                                                                                      | Rapid                                                                                                     | Inhale amyl nitrite. Artificial respiration may be necessary.                      | None needed.                                                                                           | Protective mask.                         | AC-Hydrogen cyanide<br>CK-Cyanogen chloride                                                | Colorless                                                                                                 |
| CHOKING                                        | Vapor (gas)               |                                                                                                                                                | Coughing, choking, nausea, and headache                                                                                                                   | Damage and floods lungs.                                                                                                                                    | Immediate to 3 hours.                                                                                     | For severe symptoms, avoid movement and keep warm.                                 | None needed.                                                                                           | Protective mask.                         | CC-Phosgene                                                                                | Colorless                                                                                                 |
| INCAPACITATING                                 | Aerosol                   | May look like smoke at point of release                                                                                                        | Unpredictable, irrational behavior                                                                                                                        | Temporarily incapacitates; mentally and physically                                                                                                          | Delayed                                                                                                   | Remove excessive clothing in temperatures above 78°F.                              | Wash with soap and water.                                                                              | Protective mask.                         | BZ                                                                                         | White to grayish smoke.                                                                                   |
| B. TYPES OF ENEMY IRRITANT AGENTS <sup>5</sup> |                           |                                                                                                                                                |                                                                                                                                                           |                                                                                                                                                             |                                                                                                           |                                                                                    |                                                                                                        |                                          |                                                                                            |                                                                                                           |
| VOMITING                                       | Aerosol                   | May look like smoke at point of release                                                                                                        | Coughing, nausea, vomiting, and headache                                                                                                                  | Irritates and physically incapacitates.                                                                                                                     | Rapid                                                                                                     | Move vigorously to lessen duration of effects.                                     | Wash with soap and water.                                                                              | Protective mask.                         | DM-Adamastor                                                                               | White to grayish yellow smoke.                                                                            |
| IRRITANT                                       | Aerosol                   | May look like smoke at point of release, turning color less. Instant eye irritation                                                            | Coughing and copious tears.                                                                                                                               | Irritates respiratory tract, eyes, and skin                                                                                                                 | Instantaneous                                                                                             | Close the wind with eyes open; do not rub eyes.                                    | Flush eyes, face, and skin with water.                                                                 | Protective mask.                         | CS and CM<br>Pain control agents.                                                          | White cloud                                                                                               |

<sup>1</sup>For US doctrine on detection of chemical agent on the battlefield, see paragraph 7-3b (1), FM 3-220<sup>2</sup>For details of individual first aid and decontamination, see paragraphs 4-13 through 4-21, FM 21-41.<sup>3</sup>US agent symbols are used in this figure only for convenience and for reference. For details of equivalent US chemical agent and riot control agent characteristics, see TM 3-215.<sup>4</sup>Mixtures of chemical agents, such as nerve agents and choking agents, may be used.<sup>5</sup>Although irritant agents are not considered chemical agents, they have been used routinely in combat.

Figure 1. Characteristics of and defense against types of enemy chemical agents and irritant agents.

091-503-1008 (continued)

h. Characteristics of a nuclear blast.

(1) Nuclear weapons injure in three ways -

- (a) Blast injuries - largely mechanical injuries caused by flying debris, by falling buildings, or by individuals being picked up and thrown against objects or onto the ground; also, in rare cases, injuries caused directly by blast overpressures.
- (b) Flash and flame injuries - burns caused directly by heat from the fireball or by secondary fires that are usually started by blast effects.
- (c) Nuclear radiation injuries - sickness or death caused by either initial or residual nuclear radiation.

(2) How nuclear radiation affects your body (fig. 2).

- (a) Nuclear radiation damages body cells. Excessive exposure results in what is referred to as radiation sickness. You should remember, however, that exposure to nuclear radiation does not necessarily mean that you will have radiation sickness. The damage that nuclear radiation does to the human body depends on both the amount received and the time over which it is received. It takes a tremendous amount of nuclear radiation - either initial or residual - to harm you seriously. Thus, it is entirely possible for you to receive some exposure to either initial or residual nuclear radiation and suffer little or no effects. In fact, you receive radiation from natural sources during your entire lifetime and suffer no ill effects. The difference, then, is the amount of nuclear radiation you receive in a given time.

091-503-1008 (continued)

**Table 18 Expected Effects of Nuclear Radiation on Exposed Personnel**  
(The contents of this table are in consonance with STANAG 2083.)

| Estimated exposure (rad) | Initial symptoms                                                                                                                    | Onset of symptoms                          | Incapacitation                                                                                                                                                                                                | Hospitalization                                                                                                            | Duration of hospitalization           | Final disposition                                                                                                                                                    |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 to 70 -----            | None to slight incidence of transient headache and nausea. Vomiting in up to 5 percent of exposed personnel in upper part of range. | Within 6 hours after exposure.             | None -----                                                                                                                                                                                                    | None -----                                                                                                                 | -----                                 | Duty                                                                                                                                                                 |
| 70 to 150 -----          | Transient mild headache and nausea. Some vomiting in up to 25 percent of exposed personnel.                                         | Approximately 3 to 6 hours after exposure. | None to slight decrease in ability to conduct normal duties in up to 25 percent of exposed personnel. Up to 5 percent may become combat ineffective.                                                          | Eventual hospitalization required for less than 5 percent in upper part of range.                                          | 20 to 30 days in upper part of range. | Duty. No deaths anticipated.                                                                                                                                         |
| 150 to 400 -----         | Headaches, nausea and vomiting, fatigue, and diarrhea.                                                                              | Within 3 hours after exposure.             | Can perform routine tasks; sustained combat or performance of complex tasks may be hampered. More than 5 percent of exposed personnel expected to become combat ineffective, increasing with increasing dose. | Hospitalization indicated for those in the upper range following a latent period of 10 to 30 days.                         | 30 to 90 days -----                   | Some deaths anticipated; probably less than 5 percent at lower part of range, increasing to 50 percent toward upper end; return to duty questionable in upper range. |
| 400 to 800 -----         | Severe nausea and vomiting. Diarrhea. Fever early in upper part of dose range.                                                      | Within 1 hour after exposure.              | Can perform routine tasks. Marked reduction in combat effectiveness in upper part of exposure range. Lasts more than 24 hours.                                                                                | Subject to medical sorting, hospitalization indicated for 100 percent of exposed personnel. Latent period of 7 to 20 days. | 90 to 120 days for those surviving.   | Approximately 50 percent deaths at lower part of range, increasing toward upper end; all deaths occurring within 45 days.                                            |
| Greater than 800.        | Severe and prolonged vomiting, diarrhea, fever, and prostration. Convulsions may occur at higher doses.                             | Within 1 hour after exposure.              | Severe reduction in combat effectiveness. At higher doses, transient incapacitation within 1 hour followed by capability for some response until end of latent period.                                        | Hospitalization indicated for 100 percent of exposed personnel. Latent period of less than 7 days.                         | Up to 20 days -----                   | 100 percent deaths occurring within 20 days.                                                                                                                         |

**Notes.**

- The data in this table are applicable to groups of individuals. No provision for correlation of a given dose with a given effect for an individual is included.
- The data in this table are based on the following assumptions:
  - Whole body acute exposure (within 24 hours) to neutron and/or gamma radiation (initial and/or residual).
  - Healthy, rested, well-fed adults (uninjured, fresh troops) with no previous exposure to radiation.
  - A 19,000-rad exposure likely to result in immediate, permanent incapacitation (within 15 minutes); a 14,000-rad exposure likely to result in immediate, permanent incapacitation (within 1 hour).

Figure 2. Expected effects of nuclear radiation on exposed personnel.

091-503-1008 (continued)

- (b) The effects of nuclear radiation are not noticed during exposure. You may receive an overexposure and feel perfectly well at first. If you receive enough nuclear radiation, such common symptoms as nausea, vomiting, and a weak feeling will occur within a few hours. Except in cases of extreme overexposure, these effects soon disappear. They may or may not occur again, depending upon the radiation dose received. If they do recur, it may be several days or even 2 or 3 weeks later. Personnel receiving a slight dose will recover quickly. Those who receive a moderate dose may be ill for several weeks or months but will recover. Only very heavy doses eventually result in death (see fig. 2).

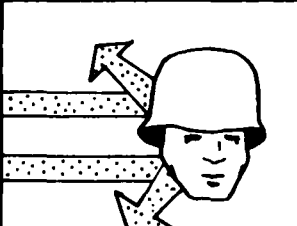
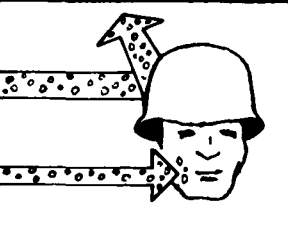
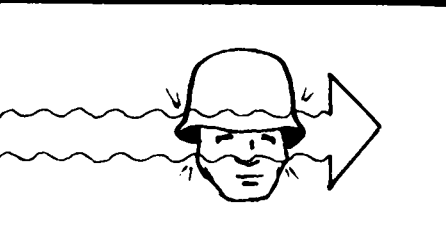
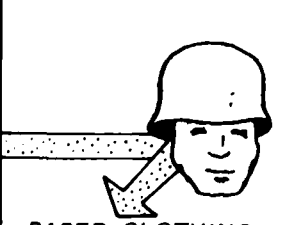
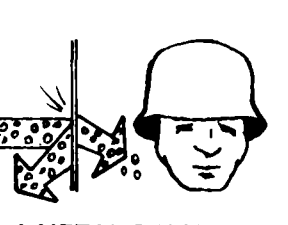
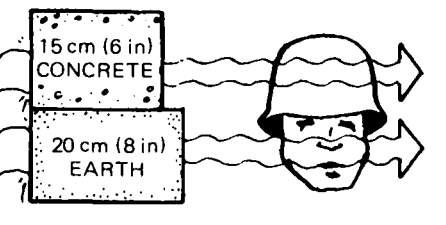
| $\alpha$<br>ALPHA<br>PARTICLES                                                                                                      | $\beta$<br>BETA<br>PARTICLES                                                                                                        | $\gamma$<br>GAMMA<br>PARTICLES                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>WON'T PENETRATE<br/>SKIN</p>                 |  <p>SOME WILL<br/>GET THROUGH SKIN</p>           |  <p>WILL GO THROUGH YOU</p>                                                                                 |
|  <p>PAPER, CLOTHING,<br/>SKIN WILL STOP THEM</p> |  <p>A METAL SHEET WILL<br/>STOP MOST OF THEM</p> |  <p>15 cm (6 in)<br/>CONCRETE<br/>20 cm (8 in)<br/>EARTH<br/>-- WILL STOP AT LEAST<br/>ONE-HALF OF THEM</p> |

Figure 3. Types of nuclear radiation.

## 091-503-1008 (continued)

3. NBC protective action. Immediately upon seeing any of the above means of delivery, or effects on the body:
  - a. Stop breathing and mask. (See task 091-503-1002.)
  - b. Sound the alarm. Yell "gas" and strike metal against metal (steel pot on vehicle body, entrenching tool against mess kit, etc.).
  - c. Seek cover (fig. 3 for nuclear only), cover exposed skin, and decontaminate. (See tasks 091-503-1004 and 091-503-1003.)
  - d. Follow subsequent directives.
4. NATO markers.
  - a. To protect yourself against the effects of chemical and biological agents and nuclear radiation, you must know what areas are contaminated. Standard markers (fig. 4) are used to mark contaminated areas. Study these markers, until you can easily recognize them. Remember, however, that contaminated areas may not be marked, and you must be alert for any indication of possible contamination.
  - b. Description. The markers are right-angled isosceles triangles with a base of 28 centimeters (approximately 11-1/2 inches) and sides of 20 centimeters (approximately 8 inches). The color of the marker and the word on the front indicate the type of contamination in an area. The words to be used are GAS for chemical, BIO for biological, and ATOM for radiological contamination. Information concerning the contamination will be added to the front of the marker. The identifying colors and words as well as the information to be placed on the front of each marker are included in figure 4. The standard markers will be made of wood, metal, plastic, composition board, or other rigid materials. If standard markers are not available, expedients containing the same information may be made of any suitable material.

091-503-1008 (continued)

- c. Use. The markers will be placed above the ground on wires, trees, or rocks with the right-angled point downward, and the front facing away from the contaminated area. Then you see the word GAS, BIO, or ATOM, you are outside the contaminated area. Where more than one kind of contamination is in an area, the appropriate markers will be used near each other.

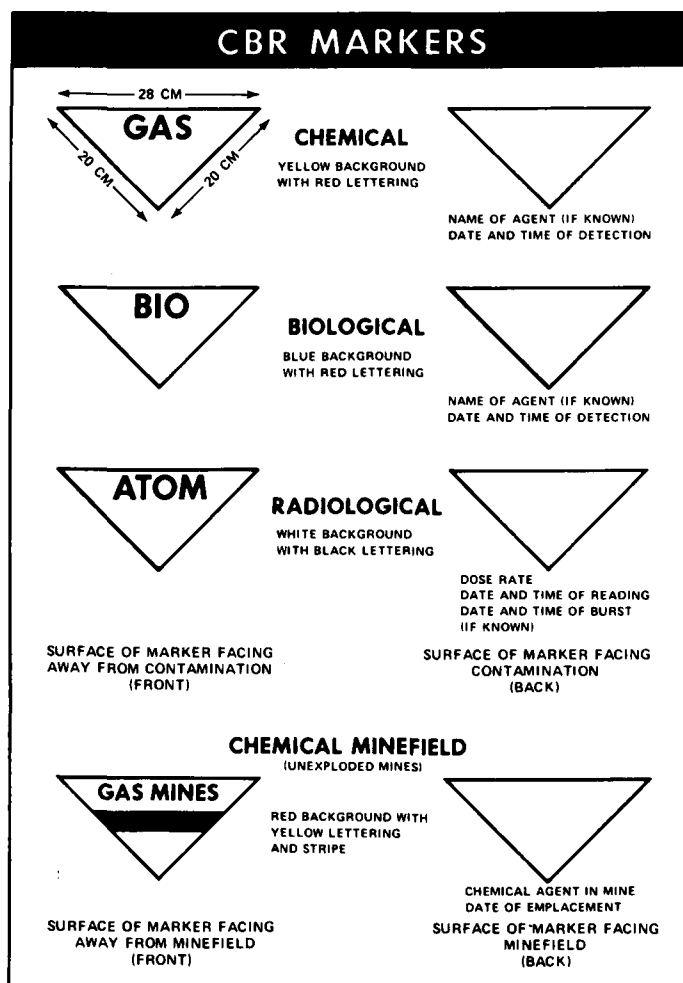


Figure 4. Markers for contaminated  
or dangerous land areas.

091-503-1008 (continued)

5. Chemical agent detector materials. The following items are components of some chemical agent detector kits and, in addition, may be issued to individuals or units (fig. 5). Although these materials will detect liquid chemical agents, they will also react with some solvents, as indicated below.

- a. Chemical agent detector paper. ABC-M18 chemical agent detector paper is issued in a booklet of 25 sheets and is a component of the chemical agent detector kits. The sheets consist of paper impregnated with chemical compounds that turn dark green, yellow, or red when in contact with V- or G-type nerve agents or blister (mustard) agents, respectively, in liquid form. This paper must touch the liquid agent to insure a positive test; it does not detect vapor. It is best suited for use on nonporous material; the test is not always reliable on porous material, which absorbs the liquid agent. Because some solvents cause a change in the color of the paper, it is unreliable for determining the completeness of decontamination by the use of solvents. A color chart is included in the booklet to aid in interpreting the tests.

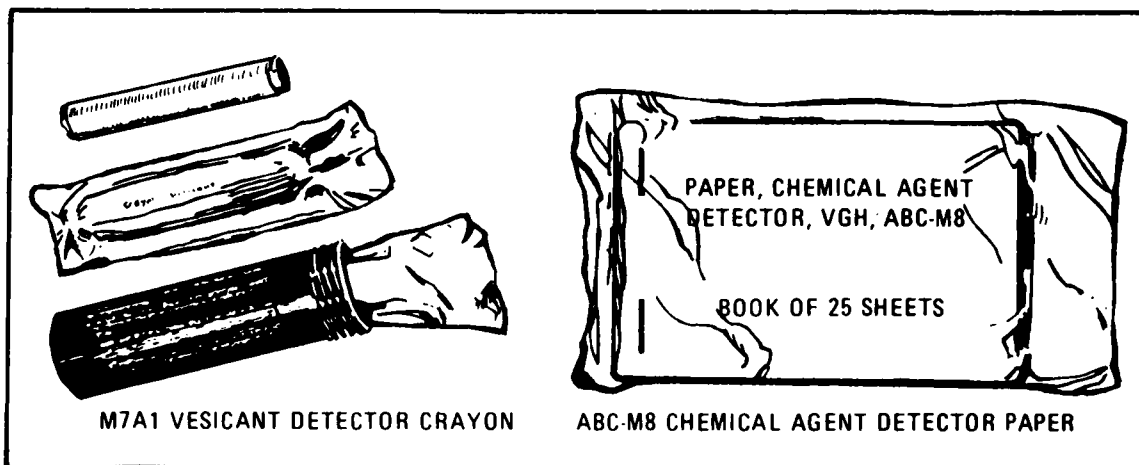


Figure 5.



091-503-1008 (continued)

- b. Vesicant detector crayon. M7A1 vesicant detector crayon is a component of the M18 chemical agent detector kit. It may be used like blackboard crayon and rubbed on equipment or on a piece of paper to detect contamination by blister (mustard) agents. Liquid or high vapor concentrations of blister agents (except the nitrogen mustards) turn detector crayon from pink to blue. The crayon cannot be used as a reliable test for other chemical agents because the reactions between the crayon and other agents are variable.

REFERENCES:

- FM 21-40; Chemical, Biological, Radiological and Nuclear Defense (chap 2, p 2-2 thru 2-15)
- FM 21-41, Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare, C.1 (chap 4, p 4-7; chap 8, p 8-9 and 8-13; chap 13, p 13-1; chap 14, p 14-3)

071-327-0201

## MAINTAIN INDIVIDUAL PHYSICAL FITNESS APPROPRIATE TO UNIT MISSION

- CONDITIONS:** During daylight, in clear weather, at a test site established for the Physical Fitness Test appropriate to your unit.
- STANDARDS:** You must demonstrate, once every 6 months, that you can meet or exceed the minimum level of physical fitness required of each member of your unit in accordance with the standards contained in AR 600-9 by:
1. Exceeding the minimum standard score of 60 points on each test event with a total score of 300 or more points on the appropriate Physical Fitness Test if you are under the age of 40 and are assigned to a combat or combat support unit.
  2. Exceeding the minimum standard total score of 300 or more points on the appropriate Physical Fitness Test if you are under the age of 40 and are assigned to a combat service support or TDA unit.
- NOTE:** For SQT purposes, all soldiers will be required to take the Advanced Physical Fitness Test (APFT). SQT credit will be awarded as follows:

| APFT SCORE    | SQT POINTS |
|---------------|------------|
| 0-299 _____   | 0          |
| 300-399 _____ | 1          |
| 400-449 _____ | 2          |
| 450-500 _____ | 3          |

- REFERENCES:** FM 21-20, Physical Readiness Training (chap 25, p 226 thru 227)  
AR 600-9, Army Physical Fitness Program (chap 2, p 2-1 and 2-2)

051-191-1361

CAMOUFLAGE/CONCEAL SELF AND INDIVIDUAL EQUIPMENT

- CONDITIONS: During daylight hours, given camouflage paint stick(s), individual weapon, load-bearing equipment (LBE), helmet complete with accessories, a snow suit (white sheet or mattress cover) if appropriate, burlap garnishing strips or cloth strips, charcoal or burnt cloth residue, and mud (if appropriate to area).
- STANDARDS: Within 15 minutes, shade shiny areas of exposed skin with dark color and shadow areas with light color. Clothing, load-bearing equipment, and weapon outlines will be altered and irregular patterns added to blend with the predominant color of the background in the area.
- PERFORMANCE MEASURES:
1. To camouflage exposed skin (fig. 1):
    - a. Paint the shiny areas (forehead, cheekbones, nose, and chin) with dark color.
    - b. Paint the shadow areas (around the eyes, under the nose, and under the chin) with a light color.
    - c. Paint the exposed skin on the back of your neck and hands with irregular patterns.
    - d. When applying camouflage, use the buddy system - work with another man and check each other.

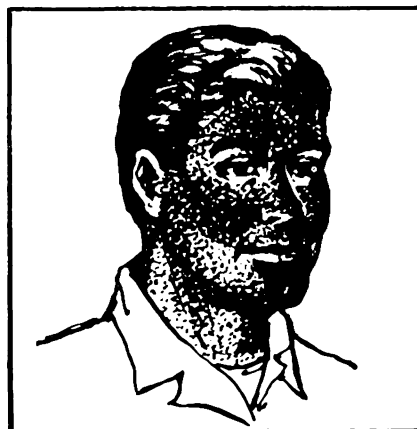


Figure 1.

051-191-1361 (continued)

## 2. Guide for skin camouflage (fig. 2).

| CAMOUFLAGE MATERIAL         | YOUR SKIN COLOR IS                                    |      | SHINE AREAS                         | SHADOW AREAS              |
|-----------------------------|-------------------------------------------------------|------|-------------------------------------|---------------------------|
|                             | LIGHT                                                 | DARK | FOREHEAD, CHEEKBONES, NOSE AND CHIN | UNDER EYES, NOSE AND CHIN |
| Loam and light green stick  | All troops use in areas lacking dark green vegetation |      | Use loam                            | Use light green           |
| Sand and light green stick  | All troops use in areas lacking dark green vegetation |      | Use light green                     | Use sand                  |
| Loam and white              | All troops use only in snow covered terrain           |      | Use loam                            | Use white                 |
| Cork charcoal or lamp black | All troops, if camouflage sticks not available        |      | Use                                 | Do not use                |
| Light color mud             | All troops, if camouflage sticks not available        |      | Do not use                          | Use                       |

Figure 2.

051-191-1361 (continued)

3. Techniques for camouflaging the helmet (fig. 3).

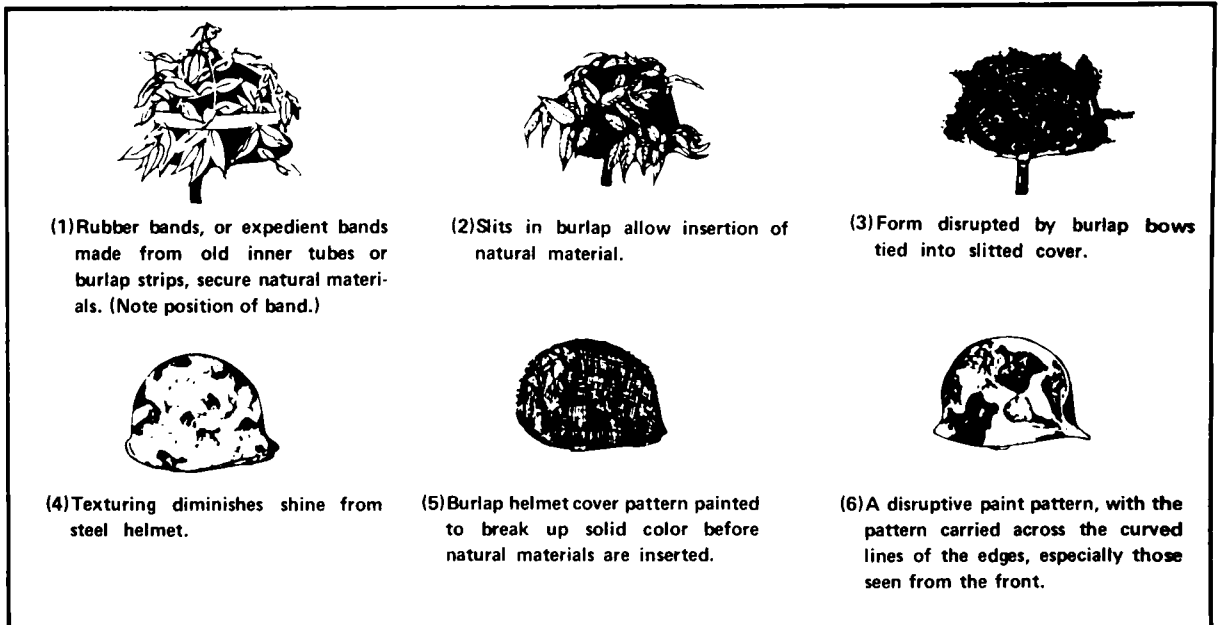


Figure 3.

4. Techniques for camouflaging LBE and weapon (fig. 4).

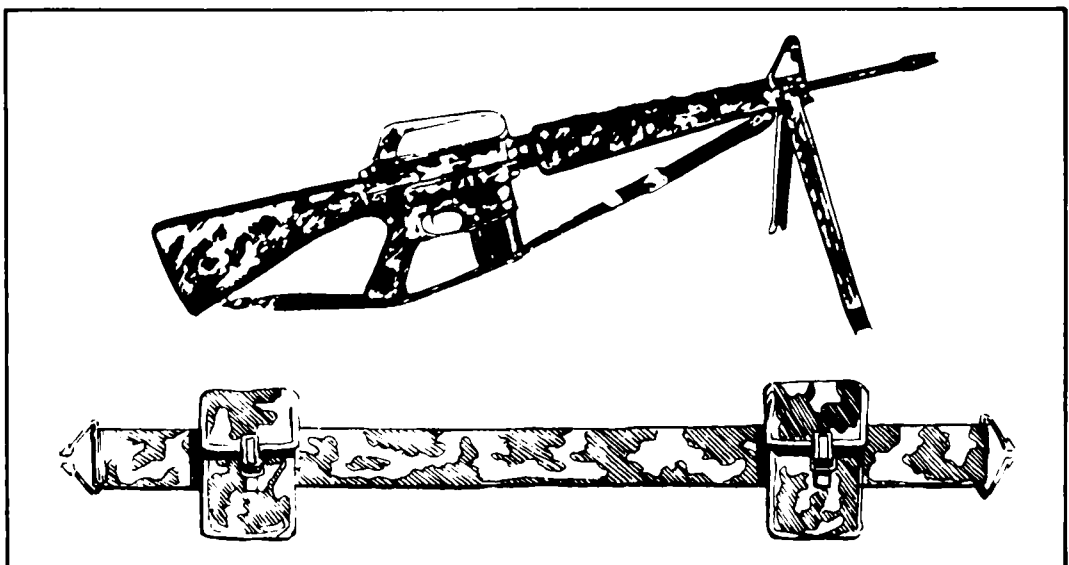


Figure 4.

051-191-1361 (continued)

5. Blending is the use of camouflage materials on, over, and around an object so that it appears to be part of the background. For example, a soldier can apply stick paint to exposed skin, and add burlap, paint, and live vegetation to his helmet, clothing, and LBE so that he will closely resemble or blend into the background (fig. 5).



Figure 5.

REFERENCES:

- FM 5-20, Camouflage (chap 4, p 26 thru 30)  
FM 21-75, Combat Skills of the Soldier, C.1 (chap 2,  
p 6 thru 11)  
TEC Lesson 937-061-0030-F; Cover, Camouflage, and  
Concealment, Part 1

051-191-1362

### CAMOUFLAGE/CONCEAL EQUIPMENT

- CONDITIONS:** During daylight hours, given any item of military equipment in a field location, natural camouflage materials (foliage, grass, mud, snow, etc.) appropriate to area, camouflage net(s), and basic-issue pioneer equipment.
- STANDARDS:** Within 30 minutes, conceal shiny parts, cover remaining areas of the equipment in irregular patterns, and alter outlines to blend with the predominant terrain background pattern in the area.
- PERFORMANCE MEASURES:** To camouflage and conceal equipment, follow these examples:
1. Use pattern paint, mud, etc., to cover shiny areas of equipment in irregular patterns so the item will blend with the color of natural surroundings (fig. 1).

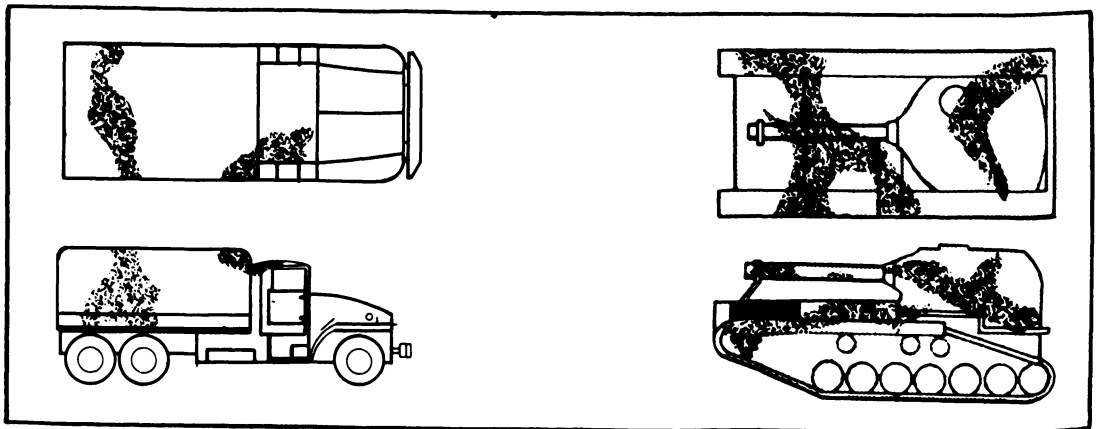
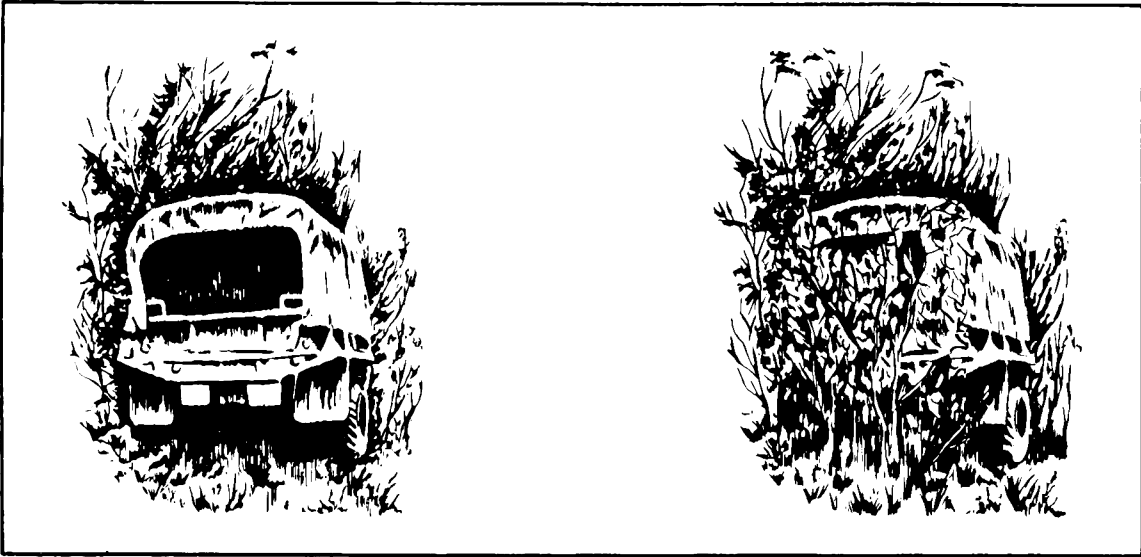


Figure 1.

051-191-1362 (continued)

2. Use natural materials (foliage, grass, mud, etc.) and manmade materials to alter the shape and size of the equipment (fig. 2).



*Figure 2.*

REFERENCES: FM 5-20, Camouflage (chap 3, p 17 thru 20; chap 6, p 35 thru 43)  
TEC Lesson 937-061-0032-F; Cover, Camouflage, and Concealment, Part 3



051-191-1363

CAMOUFLAGE/CONCEAL DEFENSIVE POSITIONS

- CONDITIONS: Before, during, and after construction of a defensive position, assigned sector(s) of fire and a specific location to construct a defensive position.
- STANDARDS: Before and during construction of the defensive position, continued camouflage preparation so that construction tools, freshly dug earth (to include vegetation), and workers are not visible to aerial or ground observers for extended periods. After completion, the position will blend with the area so that an approaching soldier approximately 35 meters to the front (hand grenade range) cannot detect it.
- PERFORMANCE MEASURES:
1. Before, during, and after construction of defensive position:
    - a. Approach the position only from the rear, insuring that a visible trail is not left. Circle the position when moving to the front so that a trail does not point out the position.
    - b. Do not litter area, make unnecessary noise, or, during hours of darkness, expose any light.
    - c. Do not disturb vegetation not used in constructing or camouflaging the position. (Be particularly careful with a vehicle, if you are a driver, to insure that the vehicle does not leave a trail pointing out the position.)
  2. During construction:
    - a. Place sod from the position in front of proposed parapet location.
    - b. Use soil removed from the position to build a parapet and then cover it with sod in such a manner that it looks natural and will have a good chance of growing. Excess soil should be carried well to the rear of the position and hidden. (Soil removed from your position must not be visible from the ground or from the air.)

051-191-1363 (continued)

- c. If additional vegetation must be used to break up the outline of the parapet, obtain some (similar to that found near your position) from far to the rear of your position with root structure intact, if possible. Do not use so much vegetation that the position has more than the surrounding area. Camouflage the holes or cuts from which vegetation was removed.

3. After construction:

- a. Replace dying foliage constantly. (Change cut foliage at least every 3 hours when the tactical situation permits.)
- b. If the ground under the weapon's muzzle (when aimed within sector of fire from completed position) is dusty, keep it moist but not excessively wet.

NOTE: Assigned weapon must be within reach at all times.

REFERENCES:

FM 5-15, Field Fortifications (chap 2, p 2-4 thru 2-9)  
FM 21-75, Combat Skills of the Soldier (chap 3,  
p 38 thru 43)

071-331-0852

### CLEAR FIELDS OF FIRE

- CONDITIONS:** Given a partially completed fighting position with an assigned sector of fire, containing thick underbrush and small to medium trees, an intrenching tool, an axe, a specified depth or field of fire to be cleared, and a designated amount of time in which to clear the field of fire.
- STANDARDS:** Within designated time, clear your sector of fire out to the specified distance so that:
1. Anyone moving through your sector of fire can be seen from your position.
  2. Anyone moving into your sector of fire will not recognize it as a cleared area.
- PERFORMANCE MEASURES:**
1. In preparing defensive positions for expected contact with the enemy, clear suitable fields of fire in front of each position.
  2. The following principles must be observed:
    - a. Do not disclose your position by excessive or careless clearing (fig. 1).
    - b. In areas organized for close defense, start clearing near your position and work forward.
    - c. In all cases, leave a thin natural screen of vegetation to hide defense positions.
    - d. In sparsely wooded areas, remove lower branches of largely scattered trees.
    - e. In heavy woods, complete clearing of the field of fire may not be possible or desirable within the time available. Restrict work to thinning undergrowth and removing lower branches of large trees. Clear narrow lanes of fire for automatic weapons, making sure that you clear in an irregular pattern that will not reveal the weapons' positions (fig. 1).
    - f. Remove or thin dense brush. It is never a suitable obstacle and it obstructs the field of fire.
    - g. Cut weeds only where they obstruct your view.
    - h. Drag away cut brush, limbs, and weeds to points where they will not be detected by the enemy or furnish him with concealment.

071-331-0852 (continued)

- i. Before clearing the fields of fire, you should make a careful estimate as to how much clearing can be done in the time available. This estimate often determines the nature and extent of the clearing to be undertaken, since a field of fire improperly cleared may afford the enemy better concealment and cover than if you left the area in its natural state.
- j. Remove all cuttings.
- k. Cover cuts on trees and brushes forward of the position with mud, dirt, or snow.
- l. Insure that no trails are made in your sector of fire as lanes are cleared.



WRONG— TOO MUCH CLEARING. DEBRIS  
NOT REMOVED ENEMY WILL AVOID



ORIGINAL TERRAIN



WRONG— AFTER IMPROPER CLEARING



RIGHT— ONLY UNDERBUSH AND TREES DIRECTLY  
IN LINE OF FIRE REMOVED. ENEMY SURPRISED



RIGHT— AFTER PROPER CLEARING

Figure 1.

REFERENCES: FM 21-75, Combat Skills of the Soldier, C.1 (chap 3, p 43)

071-331-0801

USE CHALLENGE AND PASSWORD

CONDITIONS: Given current challenge and password and a defensive position with designated sector of fire. Soldier will be told that enemy and friendly personnel may enter his sector and that he is to allow friendly personnel to pass only if they respond with correct password and to detain (capture) other personnel as he is able.

STANDARDS: Soldier will:

1. Detect and halt personnel in his sector.
2. Challenge them using correct challenge.
  - a. If given correct password, allow personnel to pass.
  - b. If not given correct password, attempt to detain (capture) personnel if he is able.

PERFORMANCE  
MEASURES:

1. IF ONE MAN DESIRES TO PASS:
  - a. Seeing or hearing someone approach your position, before that person gets close enough to pose a threat, command the person to "Halt!" Use a clear voice, just loud enough to be heard.
  - b. Seeing the stranger halt, keep the stranger covered and without exposing your position, ask "Who is there?." Again, use a clear voice but just loud enough to be heard so the enemy won't overhear if he's nearby.
  - c. When the stranger identifies himself, such as "Private Willard, Messenger," you order him to "Advance to be recognized."
  - d. Maintain your concealed position and keep the stranger covered with your weapon. When the stranger gets within two or three meters of you, again order him to "Halt!"
  - e. Issue the challenge in a soft voice and wait for the stranger to reply with the correct password. Hearing the correct password, give permission to pass if you have no other reason for doubt. If doubt still exists, demand further identification or ask a question only a friendly person would be able to answer.

071-331-0801 (continued)

2. IF A GROUP DESIRES TO PASS:

- a. The procedure and precautions for a group are almost the same as for one man. Seeing or hearing a group approach, before they are close enough to pose a threat, order them to "Halt!."
- b. The leader of the group should identify the group, such as "Friendly Patrol." Since you don't want the whole group to advance on you at once, order "Advance one man to be recognized."
- c. When the leader has come forward to be recognized give him the challenge and get the password in reply.
- d. Once you're satisfied that the leader is friendly, have the rest of the patrol advance one by one and let the leader identify each man.
- e. Person(s) not able to give the proper password or identify himself to your satisfaction is disarmed and detained. Then notify your immediate superior.

REFERENCES: FM 21-75, Combat Skills of the Soldier, C.1 (chap 2, p 17 thru 21)  
FM 22-6, Guard Duty, C.1 (chap 9, p 9-1 thru 9-2; app F, F-1 thru F-4)  
TEC Lesson 935-071-1029-F, Counterintelligence

121-030-1503

SAFEGUARD CLASSIFIED INFORMATION

- CONDITIONS: You are in possession of classified information.
- STANDARDS: You will properly safeguard classified information in your possession. You will immediately secure and report any classified material found unattended.
- PERFORMANCE MEASURES:
1. The protection of classified information is the responsibility of each individual who possesses or has knowledge of such information, regardless of how it was obtained.
  2. Security regulations do not guarantee protection and cannot be written to cover all conceivable situations; therefore, basic security principles, common sense, and a logical interpretation of the existing regulations must be applied.
  3. The collection, obtaining, recording, or removing, for any personal use whatsoever, of any matter classified in the interest of national security is prohibited.
  4. Classified documents must be identified by the appropriate cover. These are:
    - a. DA Label 22 - CONFIDENTIAL (blue).
    - b. DA Label 23 - SECRET (red).
    - c. DA Label 24 - TOP SECRET (yellow).
  5. If you find an unattended classified document, protect it and notify the responsible person or the security manager.
  6. If you find an unattended open security container, safeguard it and notify the person responsible for it. Secure the container only if you cannot reach the responsible person.
  7. Classified information is only given out on a "need-to-know" basis. A security clearance is not a license for access to all classified information.
  8. Classified information will not be discussed over the telephone.
- REFERENCES: DOD 5200.1-R, Information Service Program Regulation (chap 4, p 4-1 thru 4-3; chap 5, p 5-3 thru 5-5)  
AR 380-5, Security (sec VI, p 2-1 thru 2-12; sec VII, p 2-13 thru 2-16)  
TEC Lesson 935-071-1029-F, Counterintelligence  
ACCP AG 0055, Safeguarding Defense Information

071-331-0850

# GUARD DUTY

## PERFORMANCE TEST 1: Inspection Officer

**CONDITIONS:** Trainee, with his weapon at sling arms, is walking guard. Trainee is approached by the inspection officer. Necessary equipment is a rifle for the guard and an arm band for the inspecting officer.

**STANDARDS:** Trainee must complete each performance measure.

- PERFORMANCE MEASURES:**
1. Approach of inspecting officer. When the inspecting officer approaches:
    - a. Stop walking and come to attention.
    - b. Give the proper hand salute with weapon at sling arms.
    - c. Complete the salute when the inspecting officer returns the salute.
  2. Inspection. Answer questions asked by the inspecting officer.
  3. Departure of the inspection officer. When the inspecting officer has finished his inspection he will say "Carry on":
    - a. Give the proper hand salute and wait for the inspecting officer to return it.
    - b. Complete the salute when the inspecting officer returns the salute.
    - c. Continue walking the post.

**REFERENCES:** FM 22-6, Guard Duty (chap 2, p 4-6 thru 4-11)

## PERFORMANCE TEST 2: Night Hours with Proper or Improper Authorization

**CONDITIONS:** Trainee, with his weapon at sling arms, is walking guard. Trainee is approached by unknown person who has proper (or improper) written authorization to enter the post being guarded. Necessary equipment is a rifle and a sample of written authorization for the guard to use, and identification for visitor.

**STANDARDS:** Trainee must complete each performance measure.



071-331-0850 (continued)

PERFORMANCE  
MEASURES:

1. Approach of unknown person. Upon seeing an unknown person approach:
  - a. Come to PORT ARMS.
  - b. Command HALT.
2. Question. Once the unknown person halts, say "State your business." Unknown person says, "I am a civilian. I have come here to get some supplies."
3. Identify.
  - a. Tell the person to place his identification on the ground and back up six steps.
  - b. Watch the person while picking up the identification.
  - c. Check the person's identification with the written authorization you have.
4. Authorization.
  - a. Authorization and sample match.
    - (1) Return the identification.
    - (2) Let the person enter the building.
    - (3) Return to sling arms and continue walking your post.
  - b. Authorization and sample do not match (guardhouse is within voice distance).
    - (1) Call in a loud voice, "Commander of the relief, Post Number 2!"
    - (2) Release the person to the commander of the relief when he arrives.
    - (3) Tell the commander of the relief that the person's identification and the authorization list do not match.
    - (4) Return to sling arms and continue walking your post.
  - c. Authorization and sample do not match (guardhouse is not within voice distance).
    - (1) Bring the unknown person to the phone.
    - (2) Phone the commander of the relief.

071-331-0850 (continued)

- (3) Watch the unknown person while using the phone.
- (4) Release the person to the commander of the relief when he arrives.
- (5) Tell the commander of the relief that the person's identification and the authorization do not match.
- (6) Return to sling arms and continue walking your post.

REFERENCES: FM 22-6, Guard Duty (chap 2, p 4-6 thru 4-11)

PERFORMANCE TEST 3: Hours of Darkness with  
Proper or Improper Authorization

CONDITIONS: Trainee, with his weapon at sling arms, is walking guard. Trainee is approached by unknown person who has proper (or improper) written authorization to enter the post. Necessary equipment is a rifle, a sample of written authorization for the guard to use, and identification for visitor.

STANDARDS: Trainee must complete each performance measure.

- PERFORMANCE MEASURES:
1. Approach of unknown person. Upon hearing an unknown person approach:
    - a. Come to PORT ARMS.
    - b. Command HALT.
  2. Question.
    - a. Once the unknown person halts, ask "Who is there?" Unknown person says "Civilian employee."
    - b. State "Advance to be recognized."
    - c. As the unknown person approaches, command HALT when he can be seen, but not closer than three to six steps from you.
    - d. Once the unknown person halts, say "State your business." Unknown person says, "I have come here to get some supplies."

071-331-0850 (continued)

3. Identify.

- a. Tell the person to place his identification on the ground and back up six steps.
- b. Watch the person while picking up the identification.
- c. Check the person's identification with the written authorization you have.

4. Authorization.

a. Authorization and sample match.

- (1) Return the identification.
- (2) Let the person enter the building.
- (3) Return to sling arms and continue walking your post.

b. Authorization and sample do not match (guardhouse is within voice distance).

- (1) Call in a loud voice "Commander of the Relief, Post Number 4!"
- (2) Release the person to the commander of the relief when he arrives.
- (3) Tell the commander of the relief that the person's identification and the authorization list do not match.

c. Authorization and sample do not match (guardhouse is not within voice distance).

- (1) Bring the unknown person to the phone.
- (2) Phone the commander of the relief.
- (3) Watch the person while using the phone.
- (4) Release the person to the commander of the relief when he arrives.
- (5) Tell the commander of the relief that the person's identification and the authorization list do not match.
- (6) Return to sling arms and continue walking your post.

REFERENCES: FM 22-6, Guard Duty (chap 2, p 4-6 thru 4-11)

071-331-0850 (continued)

PERFORMANCE TEST 4: Apprehending an Intruder

CONDITIONS: Trainee, with his weapon at sling arms, is walking guard. An unknown person is hiding in the ammunition storage area. When he is seen, the unknown person begins to run. He is carrying a box. Necessary equipment is a rifle, blank adapter, and five rounds of blank ammunition for the guard; a box for the unknown person.

STANDARDS: Trainee must complete each performance measure in sequence.

PERFORMANCE  
MEASURES:

1. Apprehending.
  - a. Come to PORT ARMS.
  - b. Command HALT.
  - c. If the person does not stop, command HALT again.
  - d. If the person still fails to stop, fire a warning shot into the air.
  - e. Once the person halts, state "Do not move or I will shoot."
2. Disposition.
  - a. Call loudly, "Commander of the relief, Post Number 5!"
  - b. Turn the person and the box over to the commander of the relief.
  - c. Give commander of the relief the details of what happened.
  - d. Return to sling arms and continue walking your post.

REFERENCES: FM 22-6, Guard Duty (chap 2, p 4-6 thru 4-11)

113-571-1001

TRANSMIT OR RECEIVE A RADIO MESSAGE

- CONDITIONS: Given an FM radio set operating in a net on a frequency assigned by the appropriate CEOI with the requirement to transmit or receive a written or oral message to or from a designated station.
- STANDARDS: Transmit or receive the message to or from the appropriate station in the net so that the message is transferred by radio, using correct radio procedure, from one station to another as written or stated.
- PERFORMANCE MEASURES: As outlined in the sample transmission below:
1. Transmit PROWORDS where their intended meanings are appropriate as listed below:

PROWORDS LISTED ALPHABETICALLY

| <u>PROWORD</u>    | <u>EXPLANATION</u>                                                                                                |
|-------------------|-------------------------------------------------------------------------------------------------------------------|
| ALL AFTER         | The portion of the message to which I have reference is all that which follows                                    |
| ALL BEFORE        | The portion of the message to which I have reference is all that which precedes-                                  |
| AUTHENTICATE      | The station called is to reply to the challenge which follows.                                                    |
| AUTHENTICATION IS | The transmission authentication of this message is .....                                                          |
| BREAK             | I hereby indicate the separation of the text from other portions of the message.                                  |
| CORRECTION        | An error has been made in this transmission. Transmission will continue with the last word correctly transmitted. |

113-571-1001 (continued)

**PROWORD**

**EXPLANATION**

|                       |                                                                                                                                                                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GROUPS</b>         | <b>This message contains the number of groups indicated by the numeral following.</b>                                                                                                                                                                             |
| <b>I AUTHENTICATE</b> | <b>The group that follows it is the reply to your challenge to authenticate.</b>                                                                                                                                                                                  |
| <b>I SAY AGAIN</b>    | <b>I am repeating transmission or portion indicated.</b>                                                                                                                                                                                                          |
| <b>I SPELL</b>        | <b>I shall spell the next word phonetically.</b>                                                                                                                                                                                                                  |
| <b>MESSAGE</b>        | <b>A message which requires recording is about to follow. Transmitted immediately after the call. (This proword is not used on nets primarily employed for conveying messages. It is intended for use when messages are passed on tactical or reporting net.)</b> |
| <b>MORE TO FOLLOW</b> | <b>Transmitting station has additional traffic for the receiving station.</b>                                                                                                                                                                                     |
| <b>OUT</b>            | <b>This is the end of my transmission to you and no answer is required or expected.</b>                                                                                                                                                                           |
| <b>OVER</b>           | <b>This is the end of my transmission to you and a response is necessary. Go ahead; transmit.</b>                                                                                                                                                                 |
| <b>RADIO CHECK</b>    | <b>What is my signal strength and readability, i.e., how do you hear me.</b>                                                                                                                                                                                      |
| <b>ROGER</b>          | <b>I have received your last transmission satisfactorily, and loud and clear.</b>                                                                                                                                                                                 |
| <b>SAY AGAIN</b>      | <b>Repeat all of your last transmission. Followed by identification data means "Repeat ————(portion indicated)"</b>                                                                                                                                               |
| <b>THIS IS</b>        | <b>This transmission is from the station whose designator immediately follows.</b>                                                                                                                                                                                |

113-571-1001 (continued)

**PROWORD**

**EXPLANATION**

|                    |                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TIME</b>        | <b>That which immediately follows is the time or date-time group of the message.</b>                                                                                                                     |
| <b>WAIT</b>        | <b>I must pause for a few seconds.</b>                                                                                                                                                                   |
| <b>WAIT-OUT</b>    | <b>I must pause longer than a few seconds.</b>                                                                                                                                                           |
| <b>WILCO</b>       | <b>I have received your signal, understand it, and will comply. To be used only by the addressee. Since the meaning of ROGER is included in that of WILCO, the two prowords are never used together.</b> |
| <b>WORD AFTER</b>  | <b>The word of the message to which I have reference is that which follows</b>                                                                                                                           |
| <b>WORD BEFORE</b> | <b>The word of the message to which I have reference is that which precedes</b>                                                                                                                          |

2. Transmit isolated letters and abbreviations and phonetically spell unusual or difficult words using the phonetic alphabet as listed below:

| <b><u>LETTER</u></b> | <b><u>PHONETIC</u></b> | <b><u>SPOKEN AS</u></b>            |
|----------------------|------------------------|------------------------------------|
| <b>A</b>             | <b>ALFA</b>            | <b><u>AL</u> FAH</b>               |
| <b>B</b>             | <b>BRAVO</b>           | <b><u>BRA</u> VOH</b>              |
| <b>C</b>             | <b>CHARLIE</b>         | <b><u>CHAR</u> LEE or SHAR LEE</b> |
| <b>D</b>             | <b>DELTA</b>           | <b><u>DELL</u> TAH</b>             |
| <b>E</b>             | <b>ECHO</b>            | <b><u>ECK</u> OH</b>               |
| <b>F</b>             | <b>FOXTROT</b>         | <b><u>FOX</u> STROT</b>            |
| <b>G</b>             | <b>GOLF</b>            | <b>GOLF</b>                        |

113-571-1001 (continued)

| <u>LETTER</u> | <u>PHONETIC</u> | <u>SPOKEN AS</u>                   |
|---------------|-----------------|------------------------------------|
| H             | HOTEL           | HO <u>TELL</u>                     |
| I             | INDIA           | <u>IN</u> DEE AH                   |
| J             | JULIETT         | <u>JEW</u> LEE ETT                 |
| K             | KILO            | <u>KEY</u> LOH                     |
| L             | LIMA            | <u>LEE</u> MAH                     |
| M             | MIKE            | MIKE                               |
| N             | NOVEMBER        | NO <u>VEM</u> BER                  |
| O             | OSCAR           | <u>OSS</u> CAH                     |
| P             | PAPA            | PAH <u>PAH</u>                     |
| Q             | QUEBEC          | KEH <u>BECK</u>                    |
| R             | ROMEO           | <u>ROW</u> ME OH                   |
| S             | SIERRA          | SEE <u>AIR</u> RAH                 |
| T             | TANGO           | <u>TANG</u> GO                     |
| U             | UNIFORM         | <u>YOU</u> NEE FORM or OO NEE FORM |
| V             | VICTOR          | <u>VIK</u> TAH                     |
| W             | WHISKEY         | <u>WISS</u> KEY                    |
| X             | XRAY            | <u>ECKS</u> RAY                    |
| Y             | YANKEE          | <u>YANG</u> KEY                    |
| Z             | ZULU            | <u>ZOO</u> LOO                     |



113-571-1001 (continued)

## 3. Transmit numeral phonetically as listed below:

| NUMERAL | SPOKEN         | NUMERAL | SPOKEN         |
|---------|----------------|---------|----------------|
| 0       | ZE-RO          | 5       | FIFE           |
| 1       | WUN            | 6       | SIX            |
| 2       | TOO            | 7       | <u>SEV</u> -EN |
| 3       | TREE           | 8       | AIT            |
| 4       | <u>FOW</u> -ER | 9       | <u>NIN</u> -ER |

Numbers will be transmitted digit by digit except that exact multiples of thousands may be spoken as such. However, there are special cases, such as identifying a specific code group in a coded message, when the normal pronunciation of numerals is prescribed; for example, 17 would then be "seventeen."

| <u>NUMERAL</u> | <u>SPOKEN AS</u>                      |
|----------------|---------------------------------------|
| 44             | <u>FOW</u> -ER <u>FOW</u> -ER         |
| 90             | <u>NIN</u> -ER ZE-RO                  |
| 136            | WUN TREE SIX                          |
| 500            | FIFE ZE-RO ZE-RO                      |
| 1290           | WUN TOO ZE-RO ZE-RO                   |
| 1478           | WUN <u>FOW</u> -ER <u>SEV</u> -EN AIT |
| 7000           | SEV-EN TOU-SAND                       |
| 16000          | WUN SIX TOU-SAND                      |
| 812681         | AIT WUN TOO SIX AIT WUN               |

113-571-1001 (continued)

**SAMPLE MESSAGE: ROAD TO TILLEPS WILL BE FLOODED BY 1800  
HRS. INITIATE PLAN B.**

**TRANSMITTING STATION CALLSIGN: Z8C 28**

**RECEIVING STATION CALLSIGN: U417**

**(SAMPLE TRANSMISSION)**

**(TRANSMITTING STATION):**

**INDIA SEVEN THIS IS CHARLIE TOO  
AIT MESSAGE ... OVER**

**(RECEIVING STATION):**

**INDIA SEVEN ... OVER**

**(TRANSMITTING STATION):**

**ROAD TO TILLEPS I SPELL TANGO  
INDIA LIMA LIMA ECHO PAPA SIERRA  
TILLEPS WILL BE FLOODED BY WUN  
AIT ZERO ZERO HOTEL ROMEO SIERRA  
PERIOD INITIATE PLAN BRAVO  
PERIOD ... OVER**

**(RECEIVING STATION):**

**WILCO ... OUT**

**REFERENCES:** FM 24-18, Field Radio Techniques (chap 7, p 85 thru 91)  
TEC Lesson 936-061-0108-F, RTP, Part 1: Initiating and  
Responding to Radio Calls  
TEC Lesson 396-061-0110-F, RTP, Part 3: Responding to  
Messages  
TEC Lesson 396-061-0111-F, RTP, Part 4: Preparing Message  
to be Sent  
TEC Lesson 936-061-0112-F, RTP, Part 5: Sending and  
Receiving Messages  
ACP-125(D), Communications Instructions - Radio-Telephone  
Procedure

071-311-2001

PERFORM OPERATOR MAINTENANCE ON M16A1 RIFLE, MAGAZINES, AND AMMUNITION

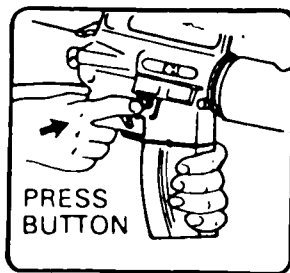
CONDITIONS: Given an M16A1 rifle, magazine, five rounds of cal. 5.56-mm ammunition (three good rounds and two dented rounds), cleaning rod, wire bore brush, chamber brush, toothbrush, rifle bore cleaner, LSA or LAW lubricant, rifle patches, and clean dry rags.

STANDARDS: Within 50 minutes:

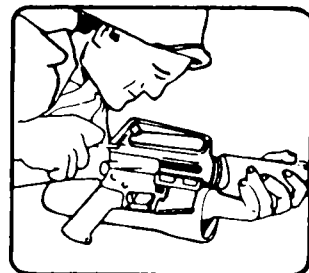
1. Inspect weapon and magazine for proper functioning of all parts.
2. Disassemble weapon and magazine.
3. Clean weapon and magazine free of dirt, grease, or carbon which will impair the operation.
4. Reassemble weapon and magazine. Conduct the function check.
5. Inspect and clean ammunition with dry cloth.
6. Turn in dented rounds to supervisor.

PERFORMANCE MEASURES:

1. Inspection.
  - a. Rifle. Visually inspect weapon for obstruction, burrs, cracks, or any deficiency which will impair the functioning of the weapon.
  - b. Magazine. Damaged magazines or those suspected of damage should not be used, and no attempt should be made to repair them.
  - c. Ammunition. Check ammunition for serious corrosion, dents, loose bullets, and dirt.
2. Disassembly of Weapon and Magazine.
  - a. Rifle Disassembly.

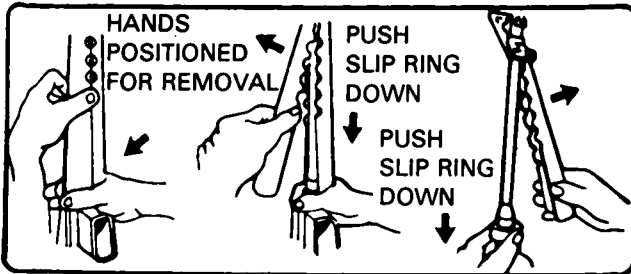


1 Remove magazine

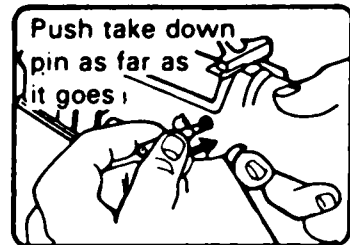


2 Open bolt and eyepiece chamber

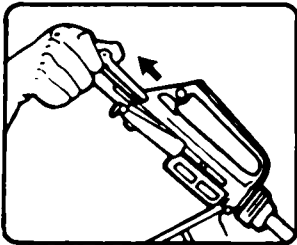
071-311-2001 (continued)



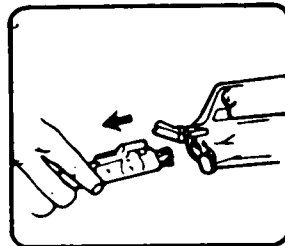
3 Remove handguards



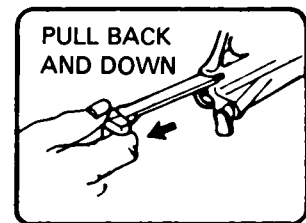
4 Pivot upper receiver from lower receiver



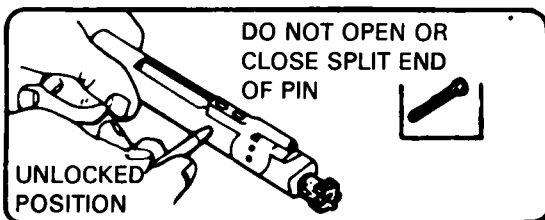
5 Pull back charging handle and bolt carrier



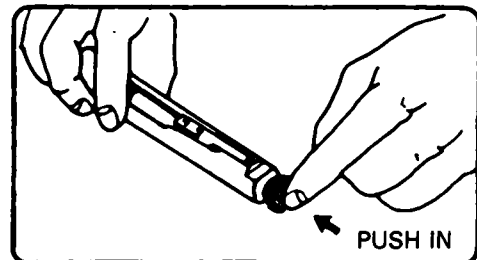
6 Remove bolt carrier and bolt



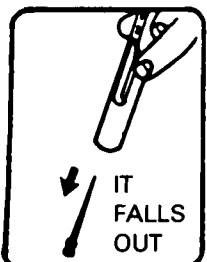
7 Remove charging handle



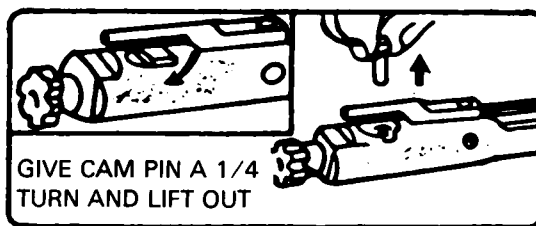
8 Remove firing pin retaining pin



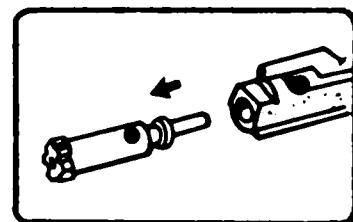
9 Put bolt assembly in lock position



10 Remove firing pin through rear of bolt carrier

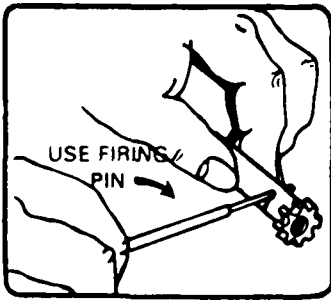


11 Remove bolt cam pin

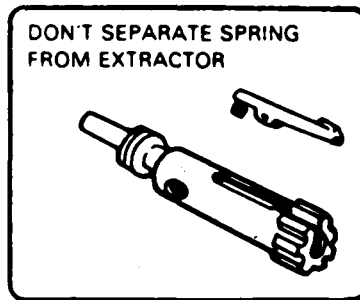


12 Remove bolt assembly from carrier

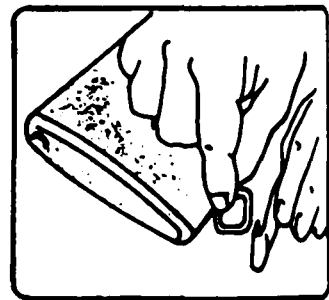
071-311-2001 (continued)



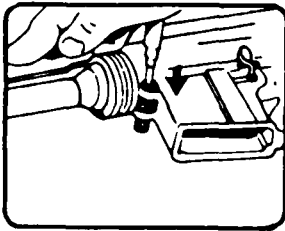
13 Remove extractor pin



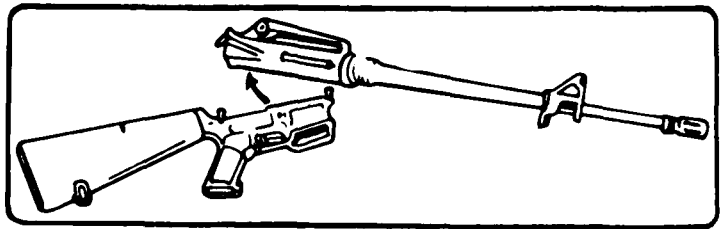
14 Remove extractor and spring



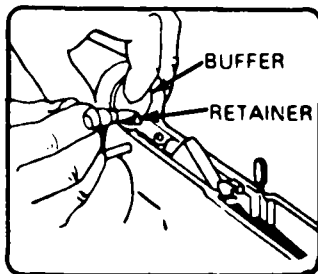
15 Remove sling



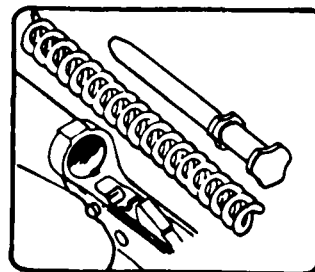
16 Push receiver pivot pin



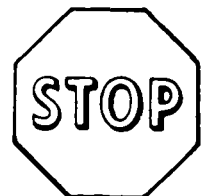
17 Separate upper and lower receivers



18 Press in buffer, depress retainer and release buffer

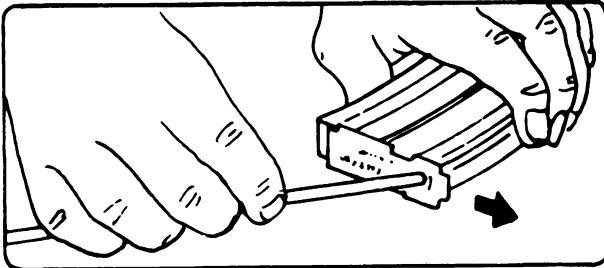


19 Remove buffer and spring

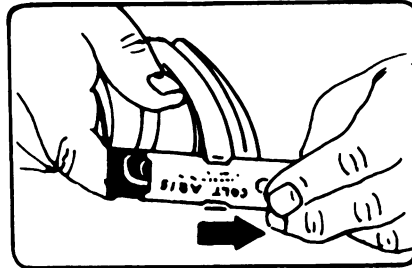


071-311-2001 (continued)

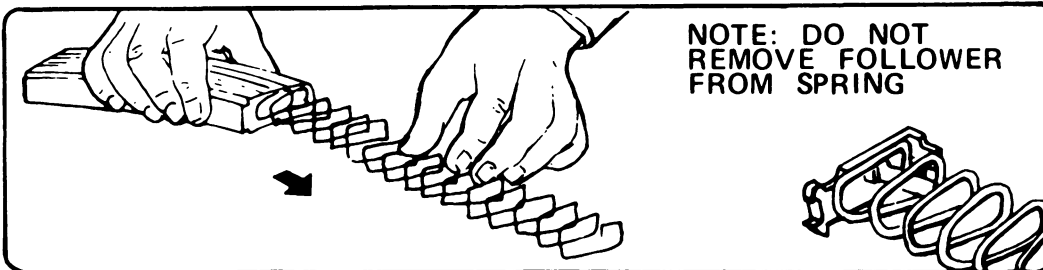
## b. Magazine Disassembly.



1. RELEASE BASE CATCH WITH ROD



2. REMOVE BASE



3. JIGGLE SPRING AND FOLLOWER TO REMOVE

## 3. Care and Cleaning.

- a. Cleaning Rifle. Clean and lightly lubricate with LSA the lugs in barrel extension, bore, and chamber. Clean and lightly lubricate the bolt carrier. Lubricate slide cam pin area, piston rings, outside bolt body, and in bolt carrier key.

(CAUTION: Apply only a light coat of LSA to firing pin and firing pin recess).

Use rifle bore cleaning compound (RBC) to clean powder fouling in the upper receiver. Clean outside surface of protruding gas tube with a worn bore brush. Coat all other surfaces with lubricant. Apply a light coat of LSA to buffer, action spring, and inner surfaces of lower receiver extension. Use generous amount inside lower receiver and on all components.

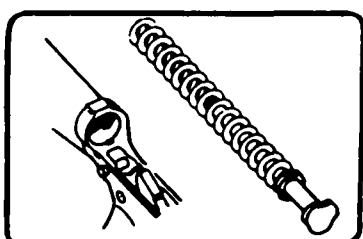
- b. Cleaning Magazine. Wipe dirt from tube, spring, and follower, then lightly lubricate the spring.

071-311-2001 (continued)

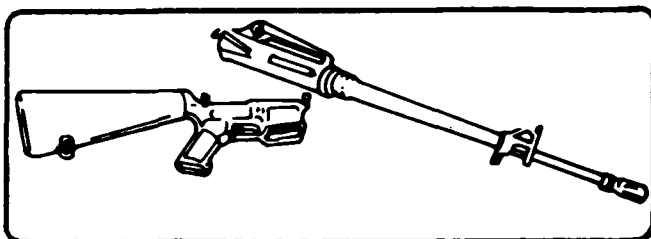
c. Cleaning Ammunition. Use a clean, dry cloth to wipe dirt and foreign matter from ammunition. Do not coat with oil.

4. Assembly of Weapon and Magazine.

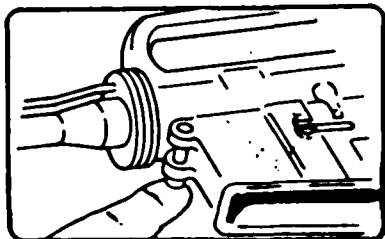
a. Rifle Assembly.



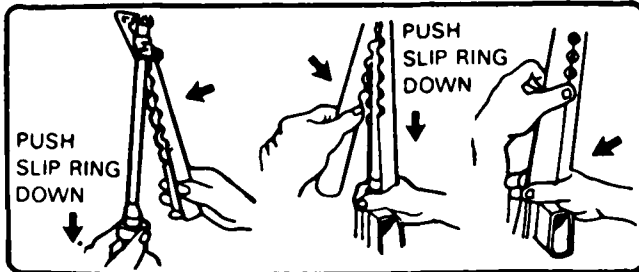
1. INSERT BUFFER AND SPRING



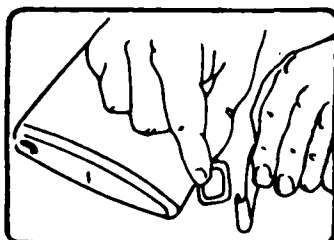
2. JOIN UPPER AND LOWER RECEIVERS



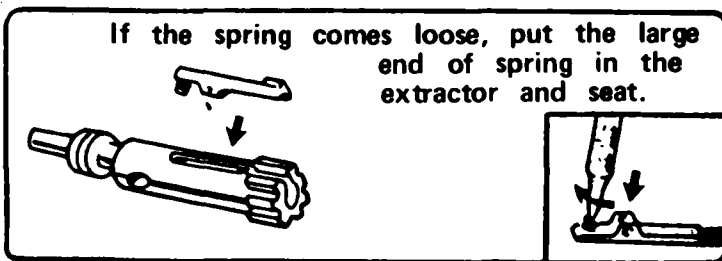
3. ENGAGE RECEIVER PIVOT PIN



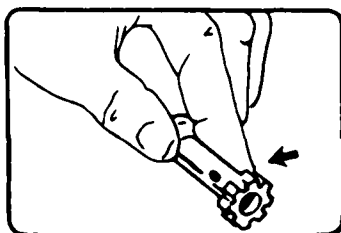
4. PUT ON HANDGUARDS



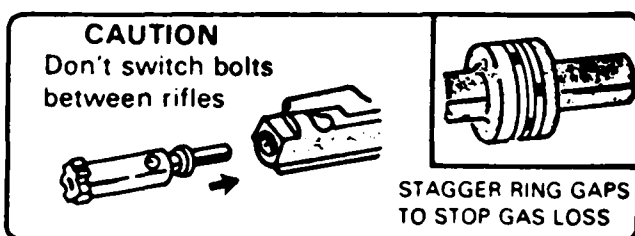
5. SNAP ON SLING



6. INSERT EXTRACTOR AND SPRING

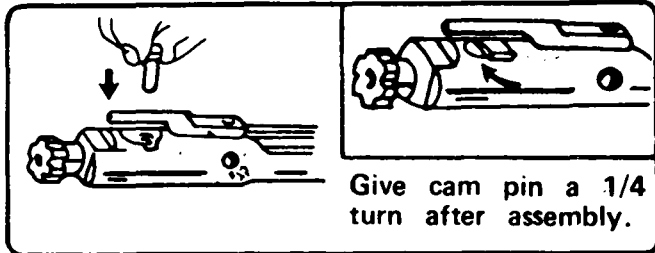


7. PUSH IN EXTRACTOR PIN

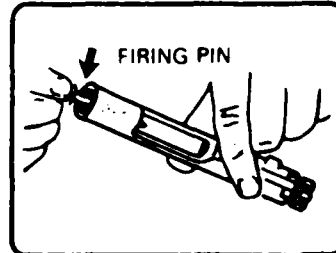


8. SLIDE BOLT INTO CARRIER

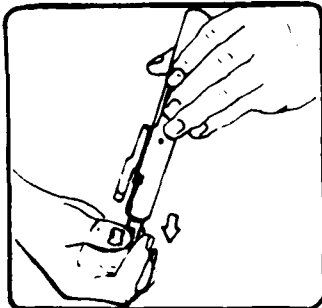
071-311-2001 (continued)



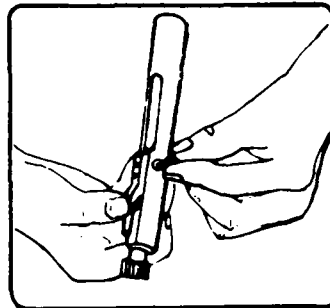
9. PUT IN BOLT CAM PIN



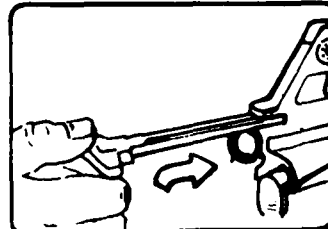
10. DROP IN AND SEAT



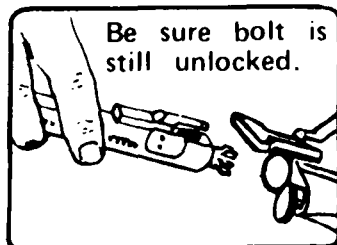
11. PULL BOLT



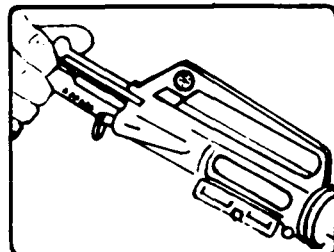
12. PUT IN PIN



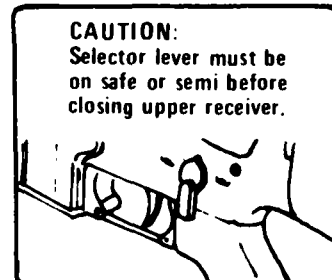
13. HOOK IN THEN PUSH CHARGING HANDLE PART WAY



14. SLIDE IN BOLT CARRIER



15. SHOVE IN CHARGING HANDLE AND BOLT CARRIER TOGETHER



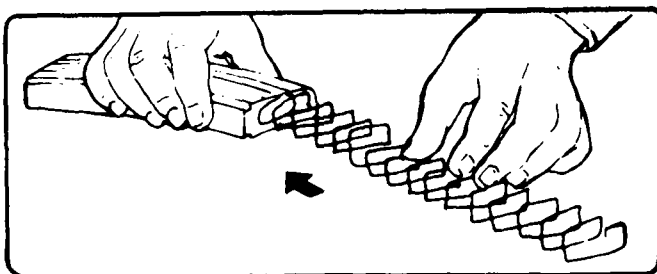
16. PUSH IN TAKE-DOWN PIN



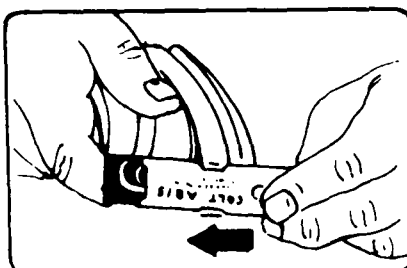
071-311-2001 (continued)

b. Magazine Assembly.

IF THE SPRING COMES LOOSE FROM THE FOLLOWER, TURN IN THE PIECES. DON'T TRY TO FIX IT YOURSELF.



1. JIGGLE SPRING AND FOLLOWER TO INSTALL



MAKE SURE PRINTING IS ON THE OUTSIDE.

2. SLIDE THE BASE UNDER ALL FOUR TABS

REFERENCES:

- FM 23-9, M16A1 Rifle and Rifle Marksmanship (chap 1, sec V, p 28 thru 41)  
TM 9-1005-249-10, Operator's Manual, C.1 (p 9 thru 26; 28 thru 29)  
TEC Lesson 939-071-0010-F, Disassembly and Assembly of the M16A1 Rifle  
TEC Lesson 939-071-0011-F, Maintaining the M16A1 Rifle

071-311-2002

LOAD AND UNLOAD AN M16A1 RIFLE MAGAZINE

CONDITIONS:

Given either a 20 or 30-round M16 rifle magazine, magazine charger, and 40 rounds (live or blanks) of 5.56-mm ammunition.

STANDARDS:

1. Load an M16 magazine insuring each round is pointed toward the raised portion of the follower so that the rounds will feed into an M16A1 rifle without causing a malfunction.
2. Unload an M16 magazine without causing damage to the magazine.

PERFORMANCE  
MEASURES:

1. Types of magazines: Either a 20 or 30-round magazine may be used with the M16A1 rifle.
2. Loading:
  - a. Either magazine may be loaded with any amount of rounds up to its capacity.
  - b. Cartridges are loaded into the magazine as illustrated in figure 1.

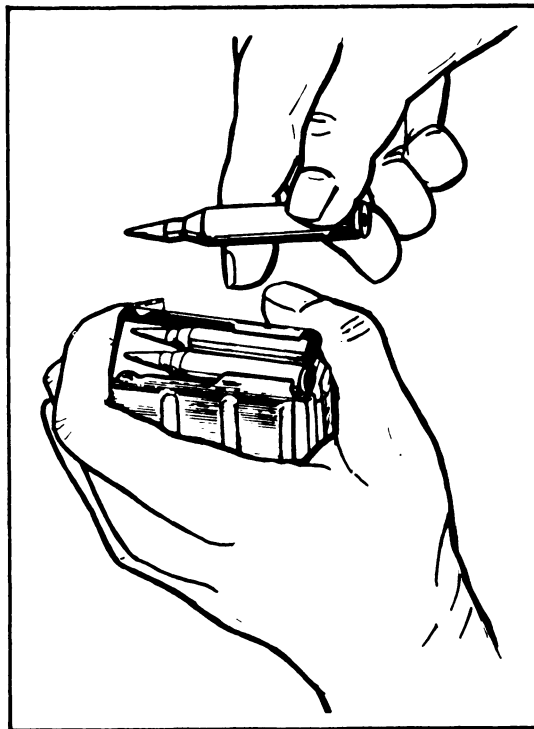


Figure 1.

071-311-2002 (continued)

- c. Cartridges can also be loaded utilizing the magazine charger and strips, as illustrated in figure 2.

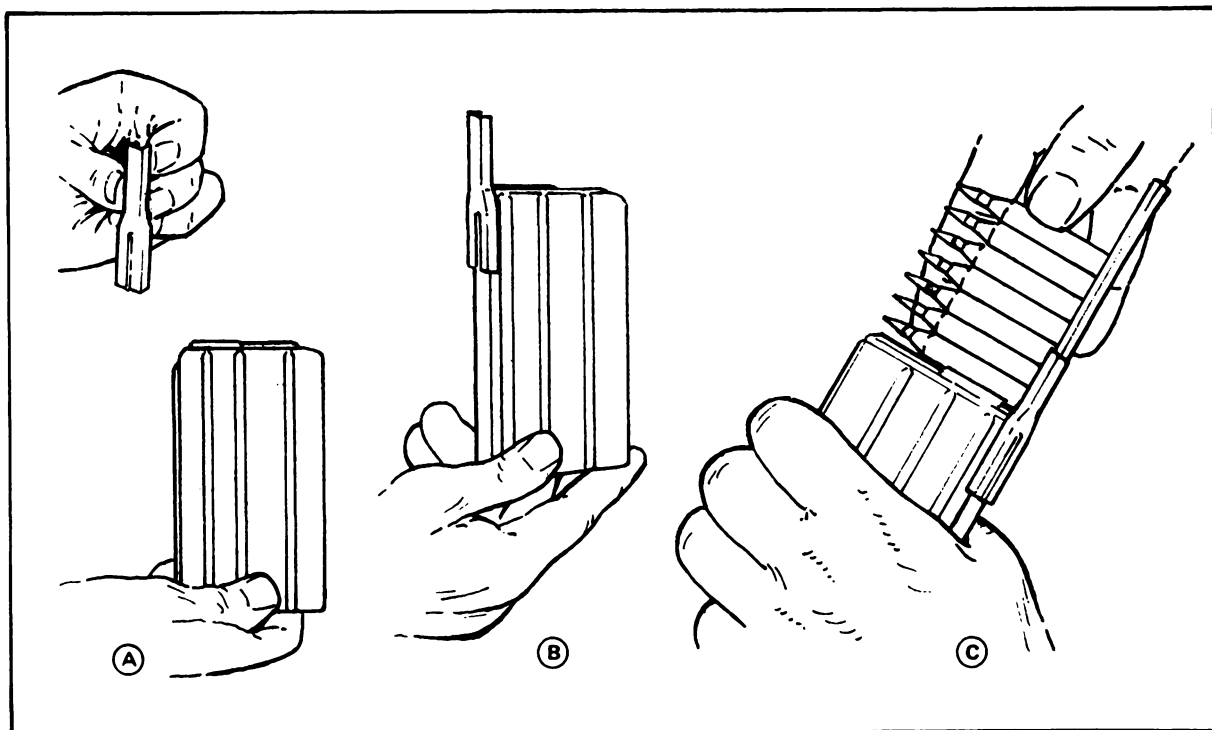


Figure 2.

CAUTION: Do not load or attempt to load either magazine with more rounds than authorized. Overloading will deform the lips of the magazine and cause malfunctions.

071-311-2002 (continued)

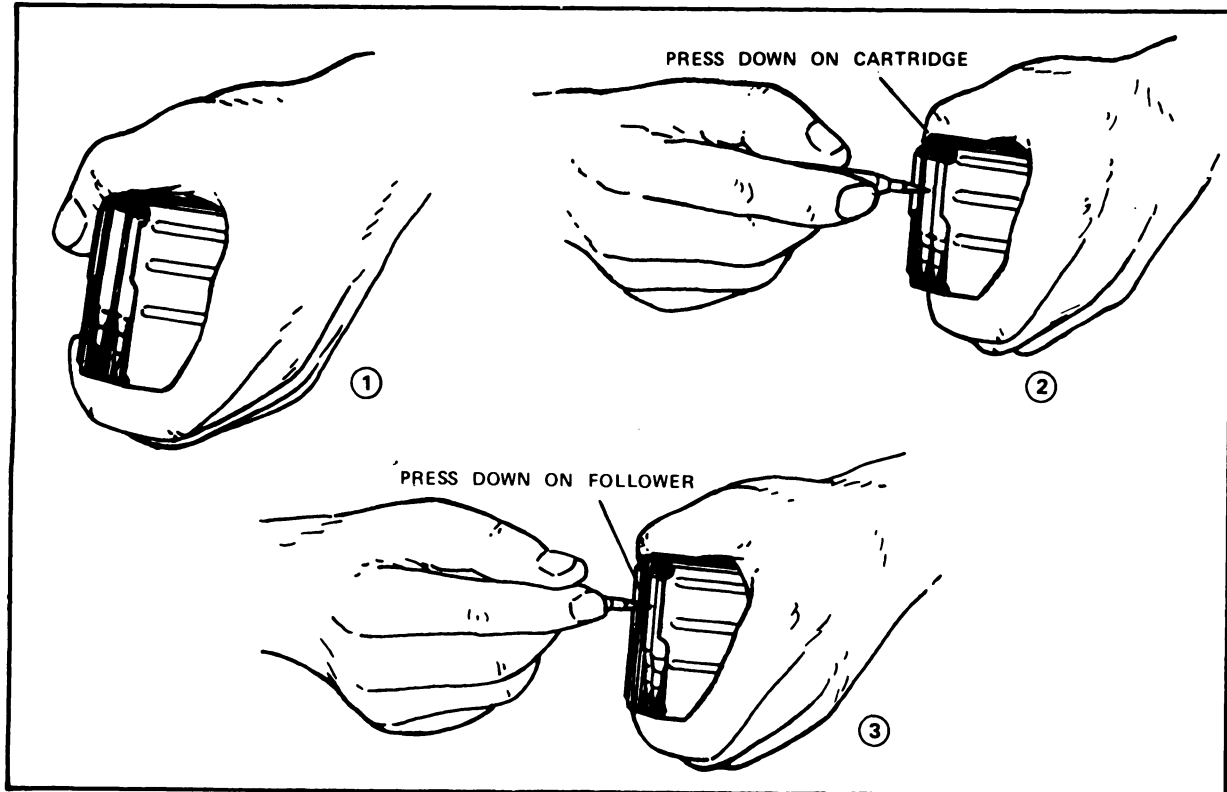


Figure 3.

3. Unloading: To prevent damage to the lips of the magazine, remove ammunition in the following manner:
  - a. Hold the magazine in the left hand with the open end away from the body, nose of the cartridge down (fig. 3, step 1).
  - b. Using the nose of a cartridge, depress the center of the second round in the magazine allowing the first round to drop out of the magazine (fig. 3, step 2). This process is repeated until all rounds have been removed from the magazine except the last.
  - c. To remove the last round, use the nose of a cartridge and depress the follower allowing the last round to drop out of the magazine (fig. 3, step 3).

## REFERENCES:

FM 23-9, M16A1 and Rifle Marksmanship (chap 1, sec IV, p 17 thru 27)  
 TEC Lesson 939-071-0009-F, Loading and Unloading the M16A1 Rifle

071-311-2003

LOAD, REDUCE A STOPPAGE, UNLOAD, AND CLEAR AN M16A1 RIFLE

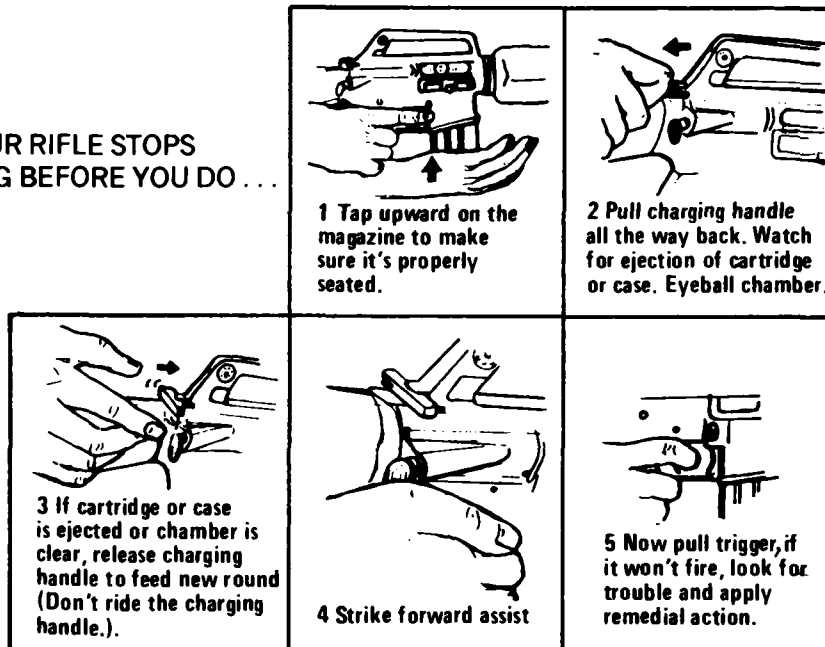
- CONDITIONS: Given an assembled and cleared M16A1 rifle, a loaded magazine, and a requirement to expend all rounds in the magazine.
- STANDARDS: Situation 1.  
Load and fire weapon within 5 seconds.
- Situation 2.  
When a stoppage occurs, stoppage must be eliminated by using immediate action and the next round fired within 10 seconds. Then fire all remaining rounds.
- Situation 3.  
Unload and clear weapon within 10 seconds.
- PERFORMANCE MEASURES:
1. Load the rifle.
    - a. With muzzle pointed in a safe direction, insert magazine containing rounds into magazine housing until magazine catch is engaged.
    - b. Tap sharply upward on base of magazine to lock the magazine in place (see note at end of para 4).
    - c. Pull bolt to rear and release, chambering a round.
  2. Fire the rifle.
    - a. Place selector on SEMI setting.
    - b. Pull trigger to fire weapon.
  3. Immediate action to reduce a stoppage (see fig. 1).
    - a. Tap upward on the bottom of the magazine to insure that it is fully seated. Pull the charging handle fully to the rear (observe for the ejection of a live or expended cartridge). If a cartridge is ejected or if the chamber is empty, release it (do not ride the charging handle forward). Strike the forward assist assembly to insure that the bolt is closed. Attempt to fire the weapon.
- NOTE: Immediate action is to be applied only one time for a given stoppage.

## 071-311-2003 (continued)

- b. If the weapon still fails to fire, it must be inspected to determine the cause of the stoppage and appropriate action must be taken.
4. Unload and clear the rifle.
    - a. Place selector on SAFE.
    - b. Remove magazine.
    - c. Open bolt and inspect chamber to insure that round is present.
    - d. Close the bolt.
    - e. Point weapon down range and pull trigger.

NOTE: Dirt in the magazine release lock is the most likely cause for a magazine to fail to lock in place.

IF YOUR RIFLE STOPS  
FIRING BEFORE YOU DO ...



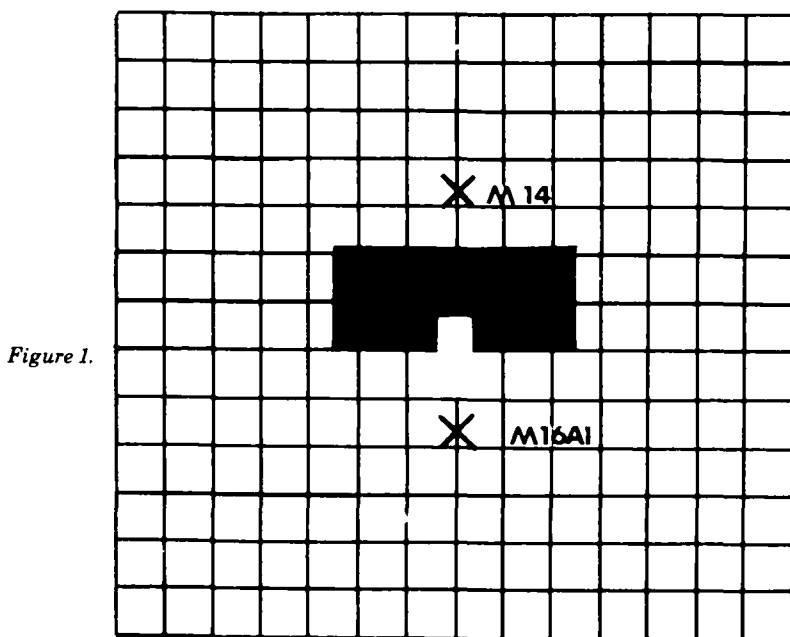
## REFERENCES:

- FM 23-9, M16A1 Rifle and Rifle Marksmanship (chap 1, sec VI, p 42 thru 54)
- TM 9-1005-249-10, Operator's Manual M16A1, C.1, C.2, (p 36 thru 40 and 44 thru 50)
- TEC Lesson 939-071-0009-F, Loading and Unloading the M16A1 Rifle
- TEC Lesson 939-071-0012-F, Preventing and Correcting Common Malfunctions

071-311-2004

ZERO AN M16A1 RIFLE

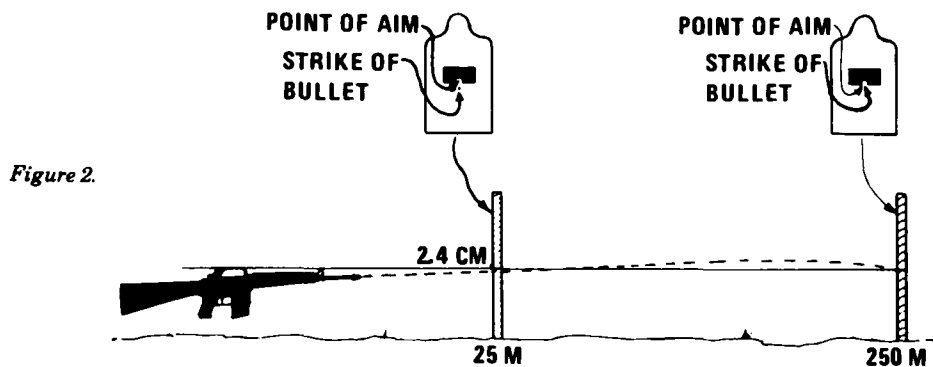
- CONDITIONS: On a 25-meter firing range, given an M16A1 rifle, magazine, 24 rounds of ammunition, battlesight zero target, sandbag support, shop group analysis card, and a firing data card.
- STANDARDS: Place the center of a shot group at the X 2.4 centimeters below the Canadian bull's-eye and have the group touch or fall within a 3-centimeter diameter circle centered on the X.
- PERFORMANCE MEASURES: 1. Battlesight Zero Target. The standard 25-meter target (fig. 1) is used when determining the battlesight zero for the M16A1 rifle. In order to use the elevation and windage rule effectively, the firer must know the dimensions of the squares on the target. Vertical and horizontal ones are printed on the target, forming 1.4-centimeter squares. One click of elevation or windage will move the strike of the bullet .7 centimeters at a range of 25 meters. Thus, in terms of the 25-meter target, two clicks of elevation or windage will move the strike of the bullet one square.



NOTE: TWO CLICKS OF ELEVATOR OR WINDAGE WILL MOVE THE STRIKE OF THE BULLET ONE SQUARE ON THIS TARGET.

071-311-2004 (continued)

2. Determining the Battlesight Zero. The 250-meter battlesight zero is determined by firing a series of three-round shot groups at the 25-meter target. The firer aims at the distinctive aiming point at the bottom center of the black rectangle (base of the white cutaway portion) and adjusts his sights until the center of his acceptable shot group is located 2.4 centimeters directly below the aiming point (fig. 2) on or around the X.



## REFERENCES:

- FM 23-9, M16A1 Rifle and Rifle Marksmanship (chap 4, sec III, p 85 thru 86)  
 TM 9-1005-249-10, Operator's Manual, M16A1 Rifle (p 30 thru 33)



071-311-2005

ENGAGE TARGETS WITH AN M16A1 RIFLE

CONDITIONS:

Situation 1.

- a. During daylight on a standard record fire range, given a zeroed M16A1 rifle, 80 rounds of caliber 5.56-mm ammunition (eight magazines of ten rounds each to engage one target with one round), a requirement to fire Record Fire I and II for qualification firing, and equipment as outlined in FM 23-9 for Record Fire I and II.
- b. During darkness on a standard night record fire range, given a zeroed M16A1 rifle, 72 rounds of caliber 5.56-mm ammunition (12 rounds for practice firing, two magazines of six rounds each; and 60 rounds for record firing, four magazines of 15 rounds each), a requirement to fire Night Record Fire, and equipment as outlined in FM 23-9 for Record Fire - Night.

Situation 2.

During daylight on a known distance range (as described in para 5 of app 1 of FM 23-9, C.1), given a zeroed M16A1 rifle, 50 rounds of caliber 5.56-mm ammunition (five magazines of ten rounds each to engage each target with ten rounds), a requirement to fire, Record Firing, Known Distance (total rounds 100) as outlined in paragraph 16(d), appendix 1 of FM 23-9.

Situation 3.

During daylight on a 1000-inch range, given a zeroed M16A1 rifle, 42 rounds of caliber 5.56-mm ammunition, a requirement to fire standard course "C" for record fire as outlined in appendix D of FM 23-9.

STANDARDS:

Situation 1.

- a. Fire Record Fire I and II and achieve a combined minimum qualification score of 43 within the minimum time as outlined in FM 23-9.
- b. Fire the standard night record fire range and achieve the minimum qualification score as dictated by the commander.

071-311-2005 (continued)

## Situation 2.

Fire Known Distance Record Firing Table (as outlined in para 16, app 1 of FM 23-9, C.1) and achieve a minimum score of 300.

## Situation 3.

Fire Record Fire Course "C", as outlined in appendix D of FM 23-9 and achieve a minimum score of 100.

NOTE: For SQT purposes, soldiers who exceed minimum performance standards will receive extra credit as follows:

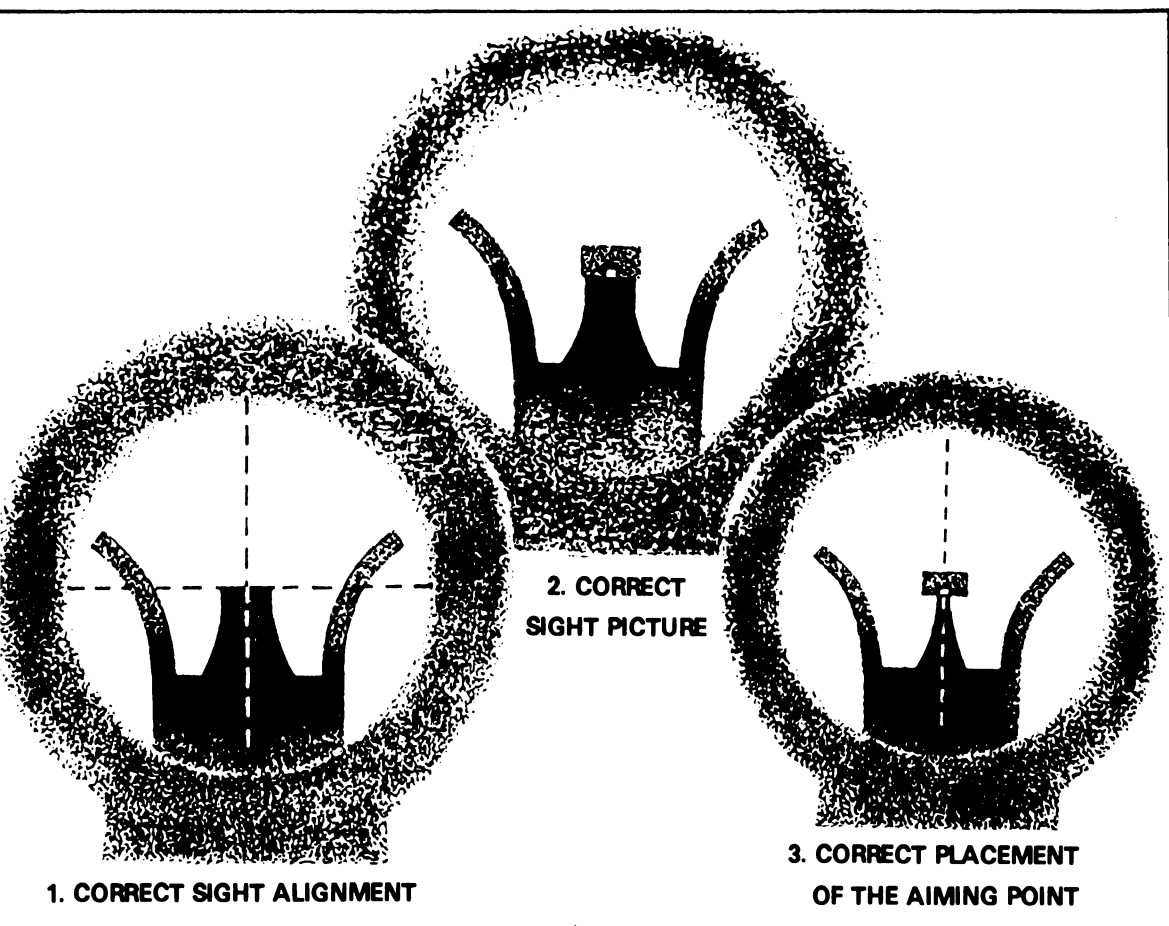
| ARMS QUALIFICATION | SQT POINTS |
|--------------------|------------|
| Unqualified _____  | 0          |
| Marksman _____     | 1          |
| Sharpshooter _____ | 2          |
| Expert _____       | 3          |

PERFORMANCE  
MEASURES :

1. Assume a stable firing position.
2. The aperture marked "L" is used for ranges beyond 300 meters and the unmarked aperture for ranges from 0-300 meters.
3. Fire the weapon using the correct sight picture and alinement and correct placement of the aiming post.
  - a. Sight Picture. In aiming, the firer is concerned with correctly pointing his rifle so the projectile will hit the target when he fires. To do this, he must have the rear sight, the front sight post, and the target, or aiming point, in their proper relationship - known as sight picture. A correct sight picture is obtained when the sights are perfectly alined and the aiming point (target) is in the correct relationship to the front sight post (fig. 1). Sight picture includes two basic elements: sight alinement and placement of the aiming point.
  - b. Sight Alinement. To obtain correct sight alinement, the sights are alined as shown in figure 2. Notice that the top center of the front sight post is exactly in the center of

071-311-2005 (continued)

the rear sight aperture. If an imaginary horizontal line were drawn through the center of the rear sight aperture, the top of the front sight post would touch this line. If an imaginary vertical line were drawn through the center of the rear sight aperture, the line would bisect the front sight post. The firer insures that he has perfect sight alinement by concentrating his attention and focusing his eye on the front post through the indistinct or fuzzy appearing rear sight aperture. By doing this any errors in sight alinement can be easily detected and corrected.

*Figure 1.*

071-311-2005 (continued)

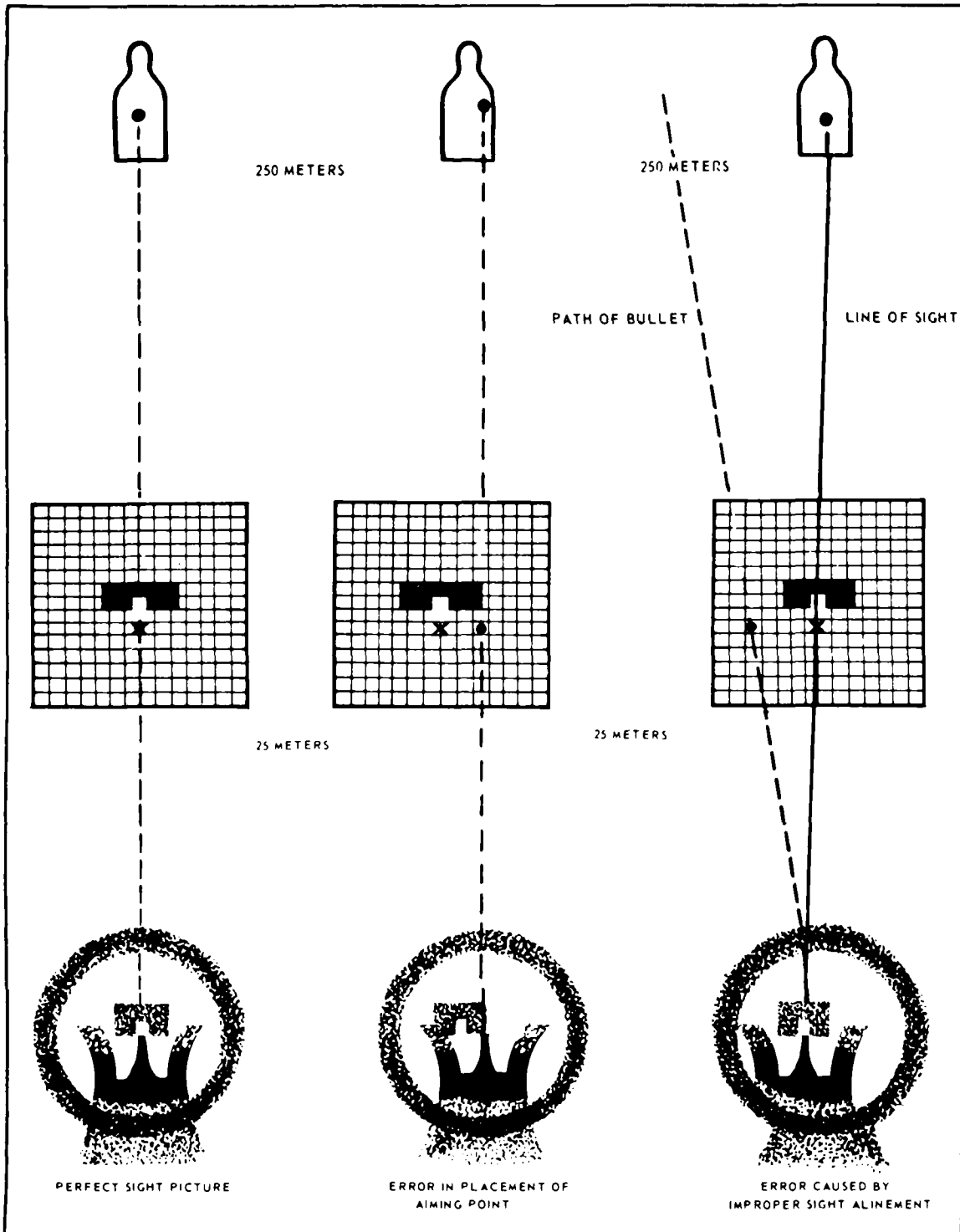


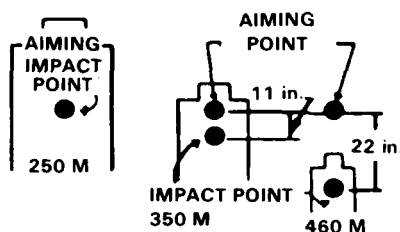
Figure 2.

071-311-2005 (continued)

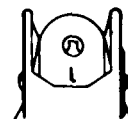
- c. Placement of the Aiming Point. The aiming point (target on which the firer has alined his rifle sights) is correctly placed when it is centered on and appears to touch the top of the front sight post. If the aiming point is correctly positioned, an imaginary vertical line drawn through the center of the front sight post will appear to cut it in half.

## USING LOW LIGHT LEVEL SIGHT SYSTEM

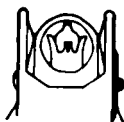
### DAYLIGHT FIRING (PROMETHIUM)



Use aperture marked L. Effective range is 250 meters (original battle sight zero) beyond which "Hold-Off" (aiming above desired point of impact) must be used. Aim about 11 in. at 350 meters, 22 in. at 460 meters. To become and remain proficient, practice "Hold-Off".



### NIGHT AND LIMITED VISIBILITY



Use unmarked (7mm) aperture. Obtain good sight picture using daylight hours procedure. After target detection, obtain good sight alignment by centering top of luminous portion of front sight post within 7mm aperture on target (View A), and fire. Under certain

light conditions, front sight post can be seen, but you can't determine whether you are looking through, above, or to the side of rear sight aperture. Practice positioning stock against shoulder, and looking through rear aperture.

#### REFERENCES:

- FM 23-9, M16A1 Rifle and Rifle Marksmanship (chap 3, sec II, p 57 thru 61)  
 TM 9-1005-249-10, Operator's Manual M16A1 Rifle, C.1, C.2 (p 31 thru 32)

071-311-2006

# PREPARE AND USE AIMING AND FIRING STAKES FOR THE M16A1 RIFLE

**CONDITIONS:** As a member of a squad in a defensive position during daylight, given an M16A1 rifle, a magazine and ammunition, with sticks or rocks and a board or log available in the area and instructions on the individual's preplanned sector of fire for use during periods of limited visibility.

**STANDARDS:** Using field expedient (tree branches) aiming and firing stakes, emplace and align these stakes on identifiable probable enemy avenues of approach, assault positions, and automatic weapons positions to include left and right limiting stakes (one may be parapet) indicating individual's preplanned sector of fire limits so that when the weapon is employed using the stakes, rounds:

1. Can be placed in selected target areas/positions.
2. Are all within sector of fire (FPF or fires on sector limits must be grazing fire).

## **PERFORMANCE MEASURES:**

1. Physically locate and identify probable enemy positions and avenues of approach.
2. Prepare field expedient aiming, firing, and limiting stakes (notched stick or tree crotch, rocks, board or log) which are able to support the weight of your weapon (fig. 1).
3. Insure stakes, horizontal log, or board are well seated into the ground.
4. Place the weapon in the rests (notched stake, tree crotch, log, or board) and aim the M16A1 to hit the desired targets or cover a sector with grazing fire, and adjust the rests to hold the weapons in place.
5. To fire, hold the M16A1 in the rest with your right shoulder firmly against the weapon's butt plate.

**NOTE:** The weapon must be held in the exact position in which it was held when it was sighted in.

6. By using additional stakes or horizontal board or log you can lay the weapon for grazing fire along more than one line or to cover an entire sector depending on the terrain (fig. 1).

071-311-2006 (continued)

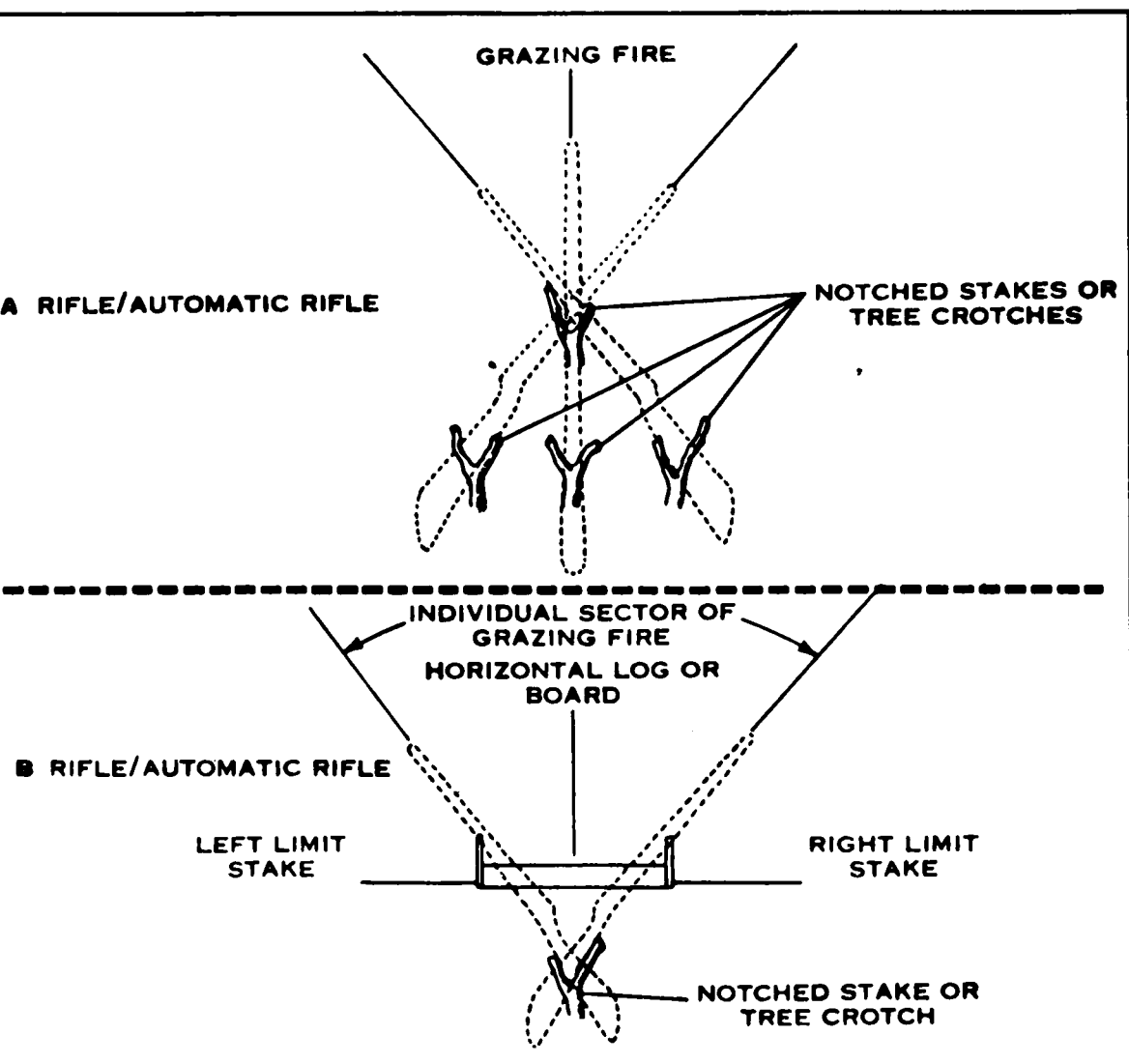


Figure 1.

REFERENCES:

FM 23-12, Technique of Fire of the Rifle Squad and Tactical Application (chap IV, sec IV, p 41 thru 47)

071-325-4402

ENGAGE ENEMY TARGETS WITH HAND GRENADES

CONDITIONS:

During daylight, in a field location, wearing field clothing, protective helmet and load-bearing equipment (LBE), and carrying your individual weapon and basic load of ammunition.

Situation 1.

Given instructions to pick up two fragmentation grenades with time delay fuzes, two fragmentation grenades with impact detonating fuzes, and one offensive (concussion) hand grenade from a resupply point containing these grenades and several special purpose grenades.

Situation 2.

After picking up the grenades as directed in situation 1 you encounter, during the conduct of a combat mission, any or all of the following enemy targets:

Target 1 - dismounted enemy troops clustered together at range of approximately 35 meters. The situation and available cover will not permit moving closer to the target.

Target 2 - an enemy emplacement without overhead cover (foxhole, trench or mortar emplacement) at a range of 20 meters. The situation and available cover will not permit moving closer to the target.

Target 3 - an enemy position with overhead cover (bunker, building, cave, etc.) which can be approached along a covered route.

STANDARDS:

Situation 1.

Within 1 minute pick up only the grenades specified.

Situation 2.

For each target:

- a. - within 30 seconds for targets 1 or 2 (within 15 seconds after moving to target 3).
- b. - using no more than two hand grenades for targets 1 or 2 or one hand grenade for target 3.



071-325-4402 (continued)

- c. - throw at least one grenade so that it explodes within the effective bursting radius for that target and grenade as listed below without exposing yourself for more than 3 seconds at any one time.

| Target                           | Grenade       | Effective Engagement      |
|----------------------------------|---------------|---------------------------|
| Troops in the open               | Frag (delay)  | Within 5 meters of center |
|                                  | Frag (impact) | Within 5 meters of center |
|                                  | Offensive     | DO NOT USE                |
| Troops dug in w/o overhead cover | Frag (delay)  | Inside of position        |
|                                  | Frag (impact) | Inside of position        |
|                                  | Offensive     | Inside of position        |
| Troops with overhead cover       | Frag (delay)  | Inside of inclosure       |
|                                  | Offensive     | Inside of inclosure       |
|                                  | Frag (impact) | DO NOT USE                |

PERFORMANCE MEASURES:

1. Identification of hand grenades. You must be able to identify those grenades which you will usually find within your unit by their shape, color and/or markings. Figures 1 through 11 will assist you in becoming familiar with the more common grenades currently available.

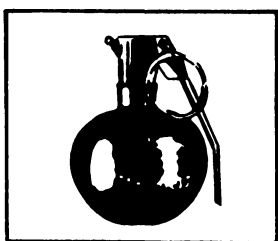


Figure 1.

*M33 FRAGMENTATION HAND GRENADE.*  
Color/Markings—OD with single yellow band and printing.

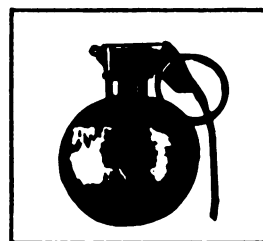


Figure 2.

*M59 FRAGMENTATION HAND GRENADE.*  
Color/Markings—OD with single yellow band and printing, red safety lever with word "IMPACT" on it.

071-325-4402 (continued)

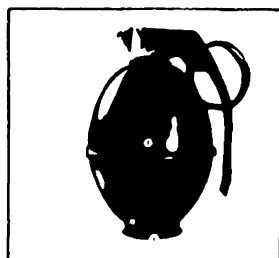


Figure 3.

*M26A1 FRAGMENTATION HAND GRENADE. Color/Markings—Same as M33.*

*\*M57 looks the same but has red safety lever with word "IMPACT" on it.*

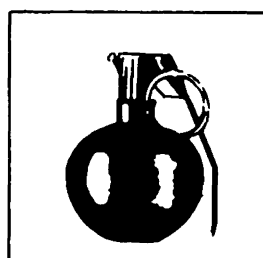


Figure 4.

*M67 FRAGMENTATION HAND GRENADE. Color/Markings—Same as M33.*

*\*M68 looks the same but has red safety lever with word "IMPACT" on it.*

**\*All of these have impact detonating fuze M217 which has a red safety lever with word IMPACT on it. Notice in figure 2 how the fuze head (M217) is shorter than the time delay fuze pictured in figures 1, 3, and 4.**

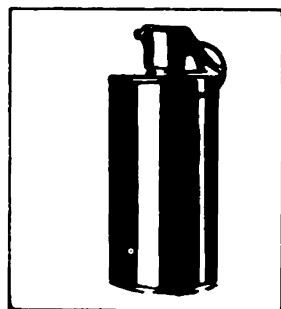


Figure 5.

*MK3A2 OFFENSIVE GRENADE. Color/Markings—Black w/yellow printing.*

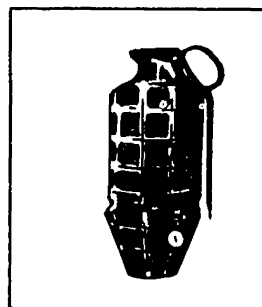


Figure 6.

*M34 WP SMOKE HAND GRENADE (STANDARD COLOR AND MARKINGS). Color/Markings—Light green, yellow band and red printing.*

*Old Markings—Light gray, yellow band, and yellow printing.*

071-325-4402 (continued)

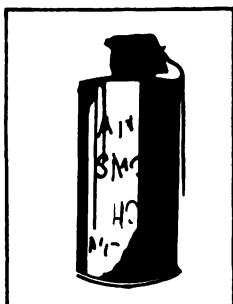


Figure 7.

**AN-M8 HC SMOKE HAND GRENADE.** Color/Markings—Light green, black printing, white top.  
NOTE: M18 Colored Smoke looks the same but the top is the same color as the smoke.



Figure 8.

**ABC-M7A3 CS RIOT CONTROL HAND GRENADE.** Color/Markings—Gray, red band(s) and red printing.  
NOTE: M6, M6A1, M7, M7A1, M7A2 look the same only the printed name changes.

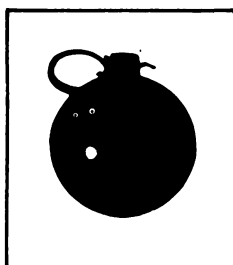


Figure 9.

**ABC-M25A2 CS RIOT CONTROL HAND GRENADE.** Color/Markings—Same as ABC-M7A3.

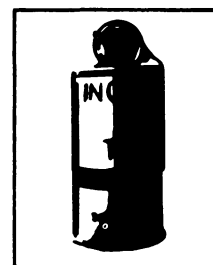


Figure 10.

**AN-M14 TH 3 INCENDIARY HAND GRENADE.** Color/Markings—Light red with black printing.  
Old Markings—Gray with purple band and purple printing.

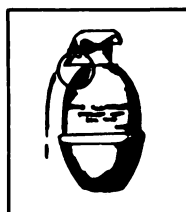


Figure 11.

**MK1 ILLUMINATING HAND GRENADE.** Color/Markings—Unpainted with black printing.  
Old Markings—White with black printing.

071-325-4402 (continued)

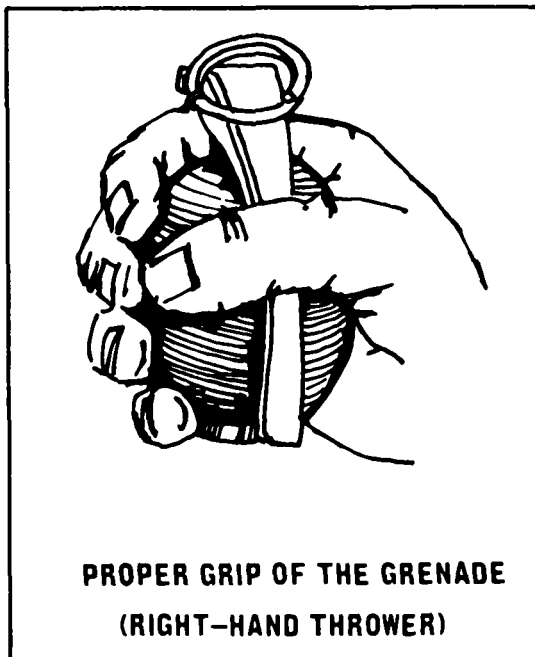
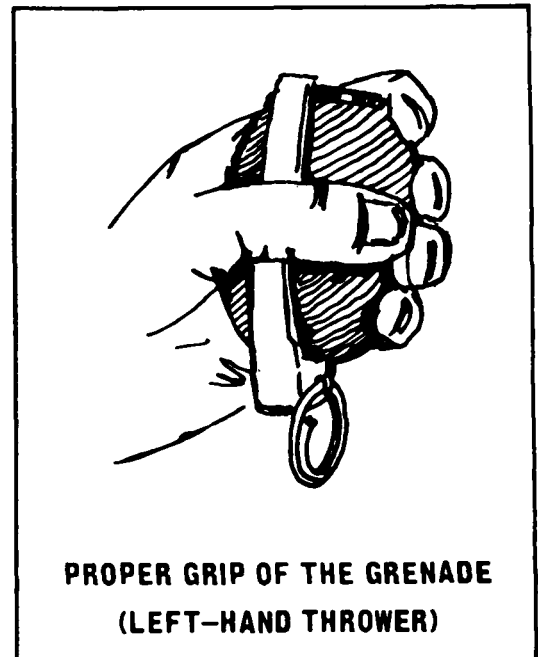
2. Uses of hand grenades. Hand grenades can assist you in accomplishing six different missions:
  - a. To disable or kill personnel - Use fragmentation or concussion grenades (M67, M68, M26A1, M56, M57, M33, M59, or MK3A2). Fragmentation grenades M68, M57, and M59 are fuze for exploding on impact after 1 second or within 4 seconds without impact. The other frag grenades (M67, M26A1, and M56) and the offensive (concussion) grenade MK3A2 will explode 4 to 5 seconds after the safety lever is released.
  - b. To signal - Use M18 Colored Smoke or M34 WP Smoke. (Extreme caution should be used if the M34 is used since it can produce casualties up to 35 meters away from where it explodes.)
  - c. To screen (provide concealment). Use AN-M8 Smoke Grenade. If the AN-M8 is not available, the M18 Colored Smoke or M34 Smoke may be used although they are not as effective as the AN-M8. (If M34 WP Smoke grenades are used, use caution as noted in b. above.)
  - d. To provide light (illuminate) - Use the MK1.
  - e. To start fires - Use the AN-M14, TH 3 Incendiary. (The M34 WP Smoke, MK1 and canister shaped riot control grenades can also start fires but should not be relied upon.)
  - f. To control riots or disable without serious injury - Use the riot control grenades ABC-M7A2 (canister shaped) or ABC-M25A2 (baseball shaped) grenades.

CAUTION: The ABC-M25A2 is a bursting-type grenade which can cause injury up to 5 meters away.

3. Throwing hand grenades.
  - a. The grip. The safest and easiest way to grip a hand grenade for throwing is to hold it so that the safety lever is held down by the thumb while keeping the pull ring (and safety clip if present) free and facing the nonthrowing hand (see fig. 12 and 13.)

071-325-4402 (continued)

- b. Body positioning and arming. The two most important points in accurate throwing of hand grenades are body-target alignment and eye-target focus. These must be practiced often, no matter which position is being used. Concentrate on these and the proper arming of the grenade. Whatever position you use, you should be as comfortable and natural as possible. Before you throw, line your body up with the target so that your arm swings naturally to it, just as you would when throwing a baseball. Then as you throw, keep your eyes on the target until after you release the grenade.

*Figure 12**Figure 13*

To throw a hand grenade:

- (1) Look at the target and judge the distance to it.
- (2) Line your body up so you can throw comfortably.

071-325-4402 (continued)

- (3) Hold the grenade under your chin and with the index finger of your other hand pull and twist the pull ring (at the same time pull the safety clip off the lever with your thumb).
- (4) As the pin is removed, look back at your target.
- (5) Keeping your eye on the target, throw the grenade overhanded.
- (6) Release the grenade after it comes into your field of vision and follow through.

NOTE: One exception to this procedure is the Riot Control grenade ABC-M25A2. Since there is no lever you must hold the arming sleeve down instead. Use the thumb of your throwing hand to do this.

c. Employing hand grenades.

NOTE: This section will address fragmentation and offensive (concussion) grenades only, since these are the ones you will normally be required to use. The use of smoke and special purpose grenades will be addressed at a higher skill level.

- (1) Fragmentation grenade with time delay fuze: M67 (fig. 4), M26A1 or M56 (fig. 3) and the M33 (fig. 1). These grenades are your best all around choice. They can be thrown a little over 40 meters by most soldiers and will kill or injure exposed soldiers that are within 15 meters of them when they explode. You should, with some practice, be able to throw the grenade to within 5 meters of a selected point 35 meters away from you or within a fighting position 2 meters wide at 20 meters range. Grenades thrown at these targets may hit and roll into the target area, but you should practice to hit the fighting position 'on the fly' in order to destroy positions with frontal cover. Another technique which can be employed with these grenades is the cook-off. To do this you release the safety lever and hold the grenade for a two count (YOU MUST NOT HOLD IT LONGER, HOWEVER).

071-325-4402 (continued)

Then when the grenade is thrown, enemy personnel will not have time to pick it up and throw it back. In addition, if it is thrown high into the air, it can explode over the target (airburst).

- (2) Fragmentation grenade with impact detonating fuze: M68, M57 and M59 (fig. 2). Like the time delay grenades these can be thrown about 40 meters and have the same effect except that they explode as soon as they hit something. With these, you must hit the target 'on the fly' not on a bounce or roll. For safety purposes, they do not arm until 1 second after releasing the lever, so if you drop it you can still recover it and throw it. If it hits something before 1 second has passed and comes to rest, it will explode after 3 or 4 more seconds. This grenade is best used when you want to insure enemy soldiers don't return it or on steep hills where the delay fuze grenade might roll away from the target.
- (3) Offensive hand grenade, MK3A2. This canister-shaped grenade can also be thrown about 40 meters, but its effectiveness against targets in the open is not very good. Against targets in confined spaces such as rooms, bunkers, or caves, it is the best choice.

d. Safety.

- (1) Do not modify grenades in any way (tape or wire, etc.).
- (2) Do not attempt to defuze grenades.
- (3) Do not remove or use grenades found upside down in their packing containers.
- (4) Do not handle dud grenades at anytime.
- (5) Do not attach grenades to clothing or equipment by the pull ring.
- (6) When using the cook-off technique, do not hold the grenade for more than 2 seconds for any reason.

071-325-4402 (continued)

## 4. Training Tips.

- a. Train for results not the process. Distance and accuracy are the desired results of training, not constant practice of step-by-step body positions. Concentrate on body-target alinement, eye-target focus, safety procedures and the end result - a target kill.
- b. Use training grenades (of the type similar to the grenades in your unit's ASP) with practice fuzes. Use expended practice fuze heads with safety levers; safety pin and safety clip for all training when 'live' practice fuzes are not available.
- c. Key on not exposing yourself for more than 3 seconds when throwing grenades.
- d. Train to minimum standards and then go on to continually higher standards and more complicated techniques (cook-off and airbursts).

## REFERENCES:

- FM 23-30, Grenades and Pyrotechnic Signals (chap 2, p 5 thru 20; chap 3, p 21 thru 24)
- TEC Lesson 942-071-0001-F, The Hand Grenade - Types and Uses
- TEC Lesson 942-071-0002-F, Hand Grenade Maintenance and Identification
- TEC Lesson 942-071-0003-F, The Hand Grenade - Carrying, Arming, and Throwing



NOTES

**PART 2****TASKS FOR ALL IMPROVED HAWK REPAIRERS****TASK NUMBER****PAGE****REPAIRING IMPROVED HAWK EQUIPMENT IN A NUCLEAR,  
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093-420-1021

REPAIR IMPROVED HAWK EQUIPMENT IN AN NBC ENVIRONMENT

**CONDITIONS:** Your section chief has told you to repair HAWK equipment in an NBC environment. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanical tool kit
3. Electrical Equipment Tool Kit TK-105/G
4. Chemical protective suit
5. Protective Hood Mask M-6AZ
6. Decontaminating Kit M-58
7. Protective Mask M-17A1
8. FM's and TM's listed in the references

**STANDARDS:** All performance measures will be in accordance with (IAW) referenced manuals. You will follow all safety rules (para 5-10, FM 9-59; FM 21-40 and FM 21-48).

**PERFORMANCE MEASURES:**

1. Check chemical protective items (para 18b, TM 21-40).
2. Put on chemical protective items (para 18b, TM 10-277).
3. Check the item for contamination (para 4-25d, FM 21-40).
4. Decontaminate equipment if necessary (para 4-25d, FM 21-40).
5. Find the trouble and fix as necessary (appropriate equipment TM).
6. Do the check procedures (appropriate equipment TM).
7. Decontaminate chemical protective items (para 28, TM 3-220).
8. Decontaminate for biological contamination (para 47a, TM 3-220).
9. Decontaminate for radiological contamination (para 27, TM 3-220).
10. Take off chemical protective items (para 18c, TM-10-277).
11. Tell your section chief that task is done.

**REFERENCES:**

- FM 9-59
- FM 21-40
- FM 21-48
- TM 3-220
- TM 10-277

093-420-1025

## REMOVE A VICTIM FROM AN ELECTRICAL SOURCE

## CONDITIONS:

You have found a victim who has come in contact with a live electrical wire. You must remove the victim from the electrical wire and apply first aid for electrical shock. You will do this task anywhere and at any time without help. You will need the following:

1. FM 21-11
2. Wooden pole
3. Rope
4. Belt

## STANDARDS:

Standards for this task will be met when you do the following:

1. Remove the victim from the electrical wire.
2. Apply first aid for electrical shock.

PERFORMANCE  
MEASURES:

1. Drag the person from the live wire using a pole. If a pole is not handy use a loop of dry rope or cloth.
2. If the breathing has stopped apply artificial respiration (chap 3).
3. Feel for a pulse. If you do not feel a pulse, administer closed chest heart massage (chap 3).



## REFERENCES:

FM 21-11

093-420-1101

PREPARE DA FORM 2402, EXCHANGE TAG

**CONDITIONS:** While repairing a major end item, you find a bad part that has to be exchanged for a good part. Your section chief has told you to fill out a DA Form 2402 to exchange the part. You will do this task on-site or in a maintenance shop area. You will need applicable equipment TM's.

**STANDARDS:** Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

**PERFORMANCE  
MEASURES:**

1. Print the support unit's unit identification code (UIC) in block 1 (para 3-2c(1)(a)).
2. Print the date in block 2 (para 3-2c(1)(b)).
3. Print the initiating unit's UIC in blocks 3, 11 and 15 (para 3-2c(1)(c)).
4. Print the National Stock Number of part to be exchanged and item priority designator in blocks 4, 12, 16 and 20 (para 3-2c(1)(d) and (1)(e)).
5. Print the name of the bad part in blocks 5, 19 and ITEM (f) (para 3-2c(1)(f)).
6. Put an X in the right box in block 6 (para 3-2c(1)(g)).
7. Print the name and the manufacturer in block 13 (para 3-2c(1)(h)).
8. Print the model number in block 9 (para 3-2c(1)(i)).
9. Print the end item serial number in blocks 10, 14, 18 and 22 (para 3-2c(1)(j)).
10. Print the date submitted in the right blocks of sections 2, 3 and 5 (para 3-2c(1)(k)).
11. Print the date of manufacture or last overhaul activity in block 23 (para 3-2c(1)(l)).
12. Print the name of manufacturer of overhaul activity in block 24 (1m) (para 3-2c(1)(m)).
13. Put an X in blocks 25 and 26 (para 3-2c(1)(n) and (1)(a)).
14. Print what is wrong with the bad part in block 27 (para 3-2c(1)(p)).
15. Tie the DA Form 2402 to the item.
16. Give item to be exchanged to the direct exchange section.

**REFERENCES:** TM 38-750

093-420-1102

## PREPARE DA FORM 2407, MAINTENANCE REQUEST (SECTION I)

- CONDITIONS:** You have a piece of equipment that cannot be fixed in your unit and your section chief has told you to fill out a DA Form 2407. You will need applicable equipment TM's. You will do this task in a maintenance shop area.
- STANDARDS:** Standards for this task will be met when all blocks are filled in correctly and all entries can be read.
- PERFORMANCE MEASURES:**
1. Print an X in the space to show that work was requested (para 3-8c(1)).
  2. Print the item priority designator (IPD) code to show the urgency of need (para 3-8c(2)).
  3. Print the page number and the sum of pages used on the top of the form (para 3-8c(3)).
  4. Print the name of your unit in block 1a (para 3-8c(5)).
  5. Print the location of your unit in block 1b (para 3-8c(6)).
  6. Print your unit identification code (UIC) in blocks 1a and 1c (para 3-8c(7)).
  7. Print serial number of equipment in block 2 (para 3-8c(8)).
  8. Print the name of the equipment in block 3 (para 3-8c(9)).
  9. Print the model number of equipment in block 5 (para 3-8c(11)).
  10. Print the National Stock Number of equipment in block 6 (para 3-8c(12)).
  11. Print the maintenance activity code of the unit to do the work in block 7 (para 3-8c(13)).
  12. Fill in block 8 (para 3-8c(14)).
  13. Fill in block 9 (para 3-8c(15)).
  14. Fill in blocks 10, 11, 12 and 13, if necessary (para 3-8c(16) thru (19)).
  15. Print an X in the right box in blocks 14 and 15 (para 3-8c(20) and (21)).
  16. Print a brief summary of what is wrong with the piece of equipment in block 16 (para 3-8c(22)).
  17. Have block 23 dated and signed (para 3-8c(23)).
  18. Give DA Form 2407 to production control section.

**REFERENCES:** TM 38-750



093-420-1103

PREPARE DA FORM 2407, MAINTENANCE REQUEST, AND DA FORM 2407-1,  
MAINTENANCE REQUEST CONTINUATION SHEET (SECTION II)

CONDITIONS: You have repaired a piece of equipment, and your section chief has told you to fill out a DA Form 2407 and, if needed, DA Form 2407-1 showing the action taken and the parts used. You will do this task on-site or in a maintenance shop area. You will need applicable equipment TM's.

STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

PERFORMANCE MEASURES:

1. Check to make sure entries in section 1 are right (para 3-12a(11)).
2. Print the name of your unit in block 17a (para 3-12a(3)).
3. Print the location of your unit in block 17b (para 3-12a(4)).
4. Print your unit identification code (UIC) in block 17c (para 3-12a(7)).
5. Put an X in the right box in block 18 (para 3-12a(6)).
6. Put the action code in column 20a (para 3-9c(4)).
7. Put the failure code in column 20b (para 3-9c(5)).
8. Print work done and parts used in column 20c (para 3-9c(6)).
9. Print manufacturer code in column 20f, if needed (para 3-9c(9)).
10. Print man-hours used in column 20g (para 3-9c(10)).
11. Print National Stock Number or part number of each part used in column 20h (para 3-9c(11)).
12. Print how many parts used in column 20j (para 3-9c(13)).
13. Print total man-hours in block 20l (para 3-9c(15)).
14. Give DA Form 2407 to production control section.

REFERENCES: TM 38-750

093-420-1104

**PREPARE DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE  
WORKSHEET (DAILY INSPECTION)**

- CONDITIONS:** Your section chief has told you to fill out a DA Form 2404 for the daily check on an item of equipment. You will do this task on-site or in a maintenance shop area. You will need applicable equipment TM's.
- STANDARDS:** Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:**
1. Print unit owning equipment in block 1 (para 3-4c(2)(a)).
  2. Print name and model of equipment in block 2 (para 3-4c(2)(b)).
  3. Print serial number in block 3 (para 3-4c(2)(c)).
  4. Print total hours of use in block 4 (para 3-4c(2)(d)).
  5. Print date in block 5 (para 3-4c(2)(e)).
  6. Print type of check or service to be done in block 6 (para 3-4c(2)(f)).
  7. Print TM number in block 7 (para 3-4c(2)(g)).
  8. Print step number of items to be fixed in column a.
  9. Put the status symbol of the uncorrected fault in column b (para 3-4c(2)(i)).
  10. Fill in column c (para 3-4c(2)(k)).
  11. Write your name in block 8a (para 3-4c(2)(k)).
  12. Print any action taken in column c (para 3-4c(2)(l)).
  13. Fill in column e (para 3-4c(2)(m)).
  14. Get your section chief to sign in block 9a, if needed (para 3-4c(2)(n)).
- REFERENCES:** TM 38-750

093-420-1105

PREPARE DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE  
WORKSHEET (INITIAL INSPECTION)

- CONDITIONS: Your section chief has told you to fill out a DA Form 2404 for the initial inspection on a piece of equipment. You will do this task on-site or in a maintenance shop area. You will do this task without help. You will need applicable equipment TM's.
- STANDARDS: Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Fill in blocks 1 thru 8 (para 3-4a(2)(a) thru (g)).
  2. Fill in column a (para 3-4c(2)(i)).
  3. Fill in column b (para 3-4c(2)(j)).
  4. Fill in column c (para 3-4c(2)(k)).
  5. Give DA Form 2404 to production control section.
- REFERENCES: TM 38-750

093-420-1106

PREPARE DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET  
(EQUIPMENT SERVICEABILITY CRITERIA) (ESC)

- CONDITIONS: Your section chief has told you to fill out a DA Form 2404 to show you have done an ESC inspection. You will do this task in a maintenance shop area. You will need applicable equipment TM's.
- STANDARDS: Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Fill in blocks 1 thru 7 (para 3-4c(2)(a) thru (g)).
  2. Fill in column a (para 3-4c(2)(i)).
  3. Fill in column b (para 3-4c(2)(j)).
  4. Fill in column c (para 3-4c(2)(k)).
  5. Fill in block 10 (para 3-4c(3)(e)).
  6. Give DA Form 2404 to your section chief.
- REFERENCES: TM 38-750

093-420-1107

PREPARE DA FORM 2765-1, REQUEST FOR ISSUE AND TURN-IN (ISSUE)

- CONDITIONS: While performing maintenance on an item of equipment, a defective part was found. To get a replacement part, your section chief has told you to fill out a DA Form 2765-1. You will do this task on-site or in a maintenance shop area. You will do this task without help. You will need AR 710-2 and applicable equipment TM's.
- STANDARDS: Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Print document number in block C1 (item 1, fig. 2-14).
  2. Print the National Stock Number or part number of the item requested in blocks 4 through 6 (item 2, fig. 2-14).
  3. Print the two letter abbreviation showing the unit of issue in block 7 (item 3, fig. 2-14).
  4. Print a G in block 12 (item 4, fig. 2-14).
  5. Put the code indicating whether the item requested is recurring (R) or nonrecurring (N) in block 13 (item 5, fig. 2-14).
  6. Print the last five digits of the unit identification code (UIC) in block 15 (item 6, fig. 2-14).
  7. Print the priority designator in block 20 (item 8, fig. 2-14).
  8. Print the quantity of item requested in block L (item 11, fig. 2-14).
  9. Print the description of item requested in block M (item 12, fig. 2-14).
  10. Print the type, number, date and page number of the publication authorizing the item requested in block O (item 13, fig. 2-14).
  11. Give DA Form 2765-1 to technical supply section.
- REFERENCES: AR 710-2

093-420-1108

## PREPARE DA FORM 2765-1, REQUEST FOR ISSUE AND TURN-IN (TURN-IN)

- CONDITIONS:** In order to fix a piece of equipment, you had to change parts. Your section chief has told you to fill out a DA Form 2765-1 for turn-in of the bad parts. This task will be done in a maintenance shop area. You will do this task without help. You will need AR 710-2 and applicable equipment TM's.
- STANDARDS:** Standards for this task will be met when you fill in all blocks and all entries can be read.
- PERFORMANCE MEASURES:**
1. Print name of supply activity in block 15 (para 2-18).
  2. Print names of parts to be turned in in block m (para 2-18 and 2-23).
  3. Print name of unit turning in parts in block b (para 2-18).
  4. Write down whether the parts are good or bad in block c (para 2-18 and 2-23a).
  5. Print document number in block c1 (para 2-18 and 2-23a).
  6. Take DA Form 2765-1 and the bad part to the supply clerk.
- REFERENCES:** AR 710-2

093-420-1109

PREPARE DA FORM 2408-1, EQUIPMENT DAILY OR MONTHLY LOG (DAILY)

- CONDITIONS: Your section chief has told you to fill out a DA Form 2408-1 to show the daily operation of a piece of equipment. You will do this task in a maintenance shop area. You will do this task without help.
- STANDARDS: Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Print item name, model and serial number in blocks 1 and 2 (para 4-5d).
  2. Fill in blocks 3 and 4 (para 4-5d).
  3. Fill in columns a thru g.
  4. Give DA Form 2408-1 to your section chief.
- REFERENCES: TM 38-750

093-420-1110

## PREPARE DA FORM 2408-1, EQUIPMENT DAILY OR MONTHLY LOG (MONTHLY)

- CONDITIONS: Your section chief has told you to fill out a DA Form 2408-1 to show the monthly operation on a piece of equipment. You will do this task in a maintenance shop area. You will do this task without help.
- STANDARDS: Standards for this task will be met when you fill in all blocks correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Print item nomenclature, model number, and serial number in blocks 1 and 2 (para 4-5d, (1) and (2)).
  2. Fill in blocks 3 and 4 (para 4-5d, (3) and (4)).
  3. Print month and year in column a (para 4-5d(5)).
  4. Fill in columns b thru e (para 4-5d, (6) thru (9)).
  5. Fill in columns f thru j (para 4-5d, (10) thru (14)).
  6. Give DA Form 2408-1 to your section chief.
- REFERENCES: TM 38-750



093-420-1111

PREPARE DA FORM 2416, CALIBRATION DATA CARD

**CONDITIONS:** Your section chief has told you to fill out a DA Form 2416 to be used as a master card for an item that must be calibrated. You will do this task in a maintenance shop area. You will need TB 43-180.

**STANDARDS:** Standards for this task will be met when you fill in all blocks correctly and all entries can be read.

**PERFORMANCE  
MEASURES:**

1. Print name, model and serial number of item to be calibrated in blocks 1 thru 4 and 9 and 10 (para 6-5d (1) thru (4); 6-5d (9) and (10); fig. 6-3 and 6-4, TM 38-750).
2. Fill in block 5 if item is reportable, (para 6-5d(5); fig. 6-3 and 6-4, TM 38-750).
3. Print interval of calibration in blocks 6 and 7 (para 6-5d(6) and (7); fig. 6-3 and 6-4, TM 38-750 and TB 43-180).
4. Print system code in block 8 (para 6-5d (8); fig. 6-3 and 6-4, TM 38-750).
5. Print the support unit's unit identification code (UIC) in block 13 (para 6-5d(13); fig. 6-3 and 6-4, TM 38-750).
6. Print the calibration due date in block 14 (para 6-5d (14); fig. 6-3 and 6-4, TM 38-750).
7. Print the correct update in block 21 (para 6-5e(7); fig. 6-5 and 6-6, TM 38-750).
8. Fill in block 22 if there is a change (para 6-5e(8); fig. 6-5 and 6-6, TM 38-750).
9. Have the repairer initial block 24 (para 6-5e (10); fig. 6-5 and 6-6, TM 38-750).
10. Print calibration and completion date in block 25 (para 6-5e (11); fig. 6-5 and 6-6, TM 38-750).
11. Print work request number in block 29 (fig. 6-5 and 6-6, TM 38-750).
12. Give DA Form 2416 to your section chief.

**REFERENCES:** TM 38-750  
TB 43-180

093-420-1120

## POST CHANGES TO BOUND PUBLICATIONS

- CONDITIONS:** Your section chief has given you changes to bound manuals, and told you to put these changes in the manuals. You will do this task in a maintenance shop area without help or references.
- STANDARDS:** Standards for this task will be met when you correctly post all changes to the manuals.
- PERFORMANCE MEASURES:**
1. Identify the changes to be made (para 10a thru d and f and fig. 1 thru 5).
  2. Make the changes in the manual (para 10a thru f and fig. 1 thru 5).
  3. Make a check mark by each item on the change as you put it in the manual (para 10g and fig. 6).
  4. Write the word posted, the date the change was made and your initials at the top of the first page of each change (para 10g and fig. 6).
  5. Put the change in the front of the manual (para 10g).
  6. Put the change number and the date the change was made on the front cover of the manual (para 9).
  7. Return the changed manual to the files.
- REFERENCES:** DA Pam 310-13

093-420-1121

POST CHANGES TO LOOSELEAF PUBLICATIONS

CONDITIONS: Your section chief has given you changes to notebook type manuals, and told you to put these changes in the manuals. You will do this task in the maintenance shop area without help or references.

STANDARDS: Standards for this task will be met when you correctly post all changes to the manuals.

PERFORMANCE MEASURES:

1. Read directions on the change (para 11a).
2. Check change pages against direction page listing (para 11b).
3. Take out old pages (para 11e).
4. Put in new pages (para 11c).
5. Make pen and ink changes where needed (para 11c).
6. Make a check mark by each place on the change direction page as pages are put in (para 11e).
7. Write the word posted, the date the change was made and your initials at the top of change direction page (para 11e).
8. Put change direction page in the front of the manual (para 9).
9. Put change number and date of the change on front cover of manual (para 9).
10. Return the manual to the files.

REFERENCES: DA Pam 310-13

093-420-1122

## POST A MESSAGE CHANGE TO A PUBLICATION

- CONDITIONS:** Your section chief has told you to post a message change to a publication. You will do this task in a maintenance shop area without help or references.
- STANDARDS:** Standards for this task will be met when you correctly post the message.
- PERFORMANCE MEASURES:**
1. Post the change (para 12).
  2. Post the approving authority (para 12).
  3. Place the message in the front of the basic publication (para 12).
  4. Return the posted publication to the file (para 12).
- REFERENCES:** DA Pam 310-13

093-420-1124

# PERFORM SINGLE TRACE DISPLAY PROCEDURES USING THE AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to measure a signal on a single trace. You must do the single trace display steps to get the right signal display. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

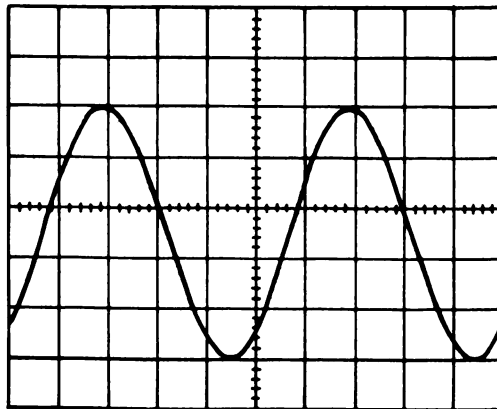
**STANDARDS:** Standards for this task will be met when you obtain a waveform on the AN/USM-281C. You will follow all safety rules (para 5-10, FM 9-59).

## **PERFORMANCE MEASURES:**

1. Do the turn-on steps (para 2-8).
2. Connect an input signal to the input jack on the vertical amplifier (para 2-10b).
3. Turn the intensity control to the right until a display is seen (para 2-10c).

**NOTE:** If no display is seen do step 1 through 7 (para 2-10c).

4. Set TIME/DIV or DLY TIME switch on dual time base for a display of the right number of cycles of input signal.



*Single trace display.*

**REFERENCES:** FM 9-59  
NAVELEX 0969-161-9020

093-420-1125

## PERFORM DUAL TRACE DISPLAY PROCEDURES USING THE AN/USM-281C OSCILLOSCOPE

- CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to measure a dual trace signal display. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.
- STANDARDS:** Standards for this task will be met when you obtain a waveform on the AN/USM-281C. You will follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Do the turn-on steps (para 2-8).
  2. Connect an input signal to the input jack on left hand vertical amplifier (para 2-10b).
  3. Turn the intensity control to the right until a display is seen (para 2-10c).
  4. Set VOLT/DIV switch on the left hand vertical amplifier for a display of four centimeters in height (para 2-11g).
  5. Set POSITION control on the left hand vertical amplifier to place the display in the upper half of the grid area (para 2-11e).
  6. Press the VERTICAL MODE RIGHT switch in (para 2-11f).
  7. Set the VOLT/DIV switch on the right hand vertical amplifier for a display of four centimeters in amplitude.
  8. Set the POSITION control on the right hand vertical amplifier to place the display in the lower half of the grid area.
  9. Press the VERTICAL MODE alternate switch in (para 2-11i).
  10. Set the TIME/DIV or the DLY TIME switch on the dual time base for a display of the desired number of cycles of the input signal.
- REFERENCES:** FM 9-59  
NAVELEX 0969-161-9020

093-420-1126

PERFORM DELAYED SWEEP SINGLE TRACE DISPLAY USING THE  
AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to setup the AN/USM-281C oscilloscope to measure a delayed sweep signal. You must do the delayed sweep single trace steps to get the right signal display. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

STANDARDS: Standards for this task will be met when you obtain a waveform on the AN/USM-281C. You will follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Do the turn-on steps (para 2-8).
2. Set controls for a display (para 2-10a, b and c).
3. Set the TIME/DIV or DLY TIME switch so the portion of the sweep to be magnified is near the center of the grid area (para 2-12b).
4. Pull the delayed time/division switch out to stop and turn to the right to a higher rate setting. One portion of the trace will be displayed at a higher intensity level (para 2-12c).

NOTE: If necessary, adjust the INTENSITY control for the desired viewing level (para 2-12d).

5. Set the DELAY TIME MULT dial control to move the intensified portion of the trace to cover the portion of the display to be examined (para 2-12e).
6. Set the TIME/DIV or DLY TIME switch and the delayed time/division switch for the desired sweep rates for the main and delayed sweeps (para 2-12f).
7. Push the delayed time/division switch in. Section of the trace that was intensified should be expanded to cover the entire grid horizontal scale (para 2-12g).

REFERENCES: FM 9-59  
NAVELEX 0969-161-9020

093-420-1127

PERFORM DELAYED SWEEP DUAL TRACE PROCEDURES USING THE  
AN/USM-281C OSCILLOSCOPE

- CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope for a delayed sweep dual trace display. You must do the delayed sweep dual trace display steps to get the right signal display. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.
- STANDARDS:** Standards for this task will be met when you obtain a waveform on the AN/USM-281C. You will follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Do the dual trace steps, omitting steps i and j (para 2-11).
  2. Press the VERT MODE LEFT switch in.
  3. Do all the delayed sweep single trace steps, omitting step a (para 2-12).
  4. Press the VERT MODE CHOP or VERT MODE ALT switch in.
- REFERENCES:** FM 9-59  
NAVELEX 0969-161-9020



093-420-1128

PERFORM X-Y DISPLAY PROCEDURES USING THE  
AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to setup the AN/USM-281C oscilloscope for an X-Y display. You must do the X-Y display steps to get the right signal display. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 09691619020.

STANDARDS: Standards for this task will be met when you obtain a waveform on the AN/USM-281C. You will follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Take the dual time base unit out of the right hand compartment (para 2-14a).
2. Take the vertical amplifier out of the center compartment and put it in the right hand compartment (para 2-14b).
3. Set controls as required (para 2-8).

NOTE: Do not adjust dual time base controls.

4. Connect the X input signal to the left hand vertical amplifier and the Y input signal to the right hand vertical amplifier (para 2-14d).
5. Turn the INTENSITY control to the right until a display is seen (para 2-14e).

NOTE: If no display is seen do steps 1 through 5 (para 2-14e).

REFERENCES: FM 9-59  
NAVELEX 0969-161-9020

093-420-1129

PERFORM PEAK-TO-PEAK VOLTAGE MEASUREMENTS USING THE  
AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to measure a peak-to-peak voltage. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete the peak-to-peak voltage measurement steps.
2. Find the correct peak-to-peak voltage.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE  
MEASURES:**

1. Connect a signal to the vertical amplifier input jack (para 2-19a1).
2. Set the vertical amplifier COUPLING switch for AC coupling (para 2-19a2).
3. Set the vertical amplifier deflection factor switch for about five divisions amplitude of the waveform (para 2-19a3).
4. Set the dual time base triggering controls for a stable display (para 2-19a4).
5. Set the dual time base SWEEP RATE controls for a display of several cycles of the waveform (para 2-19a5).
6. Adjust the vertical amplifier position control so the lower portion of the waveform is on one of the lower horizontal grid lines, and top of the waveform is within grid area (para 2-19a6).
7. Adjust dual time base position control so the peak to be measured is near the center of the vertical line (para 2-19a7).

**NOTE:** Make sure the vertical amplifier control is turned all the way to the right (para 2-19a8).

8. Measure the amplitude of the waveform in divisions of the grid (para 2-19a9).
9. Multiply the results of performance measure 8 by the deflection factor and, if appropriate, the attenuation factor of the probe you are using (para 2-19a10).

**REFERENCES:**

FM 9-59  
NAVELEX 0969-161-9020

093-420-1130

PERFORM DC VOLTAGE MEASUREMENTS WITH THE AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to measure DC voltage. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete the DC voltage measurement procedures.
2. Find the correct DC voltage.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Connect a signal at the vertical amplifier input jack (para 2-19b1).
2. Set the vertical amplifier deflection factor switch for five divisions amplitude of the waveform (para 2-19b2).
3. Set the vertical amplifier coupling switch to GND position and adjust control to place the trace on the bottom line of the grid (para 2-19b3).
4. Set the vertical amplifier coupling switch for DC coupling (para 2-19b4).
5. Set the dual time base triggering controls for DC coupling (para 2-19b5).
6. Set the dual time base sweep rate controls for the desired display of the waveform (para 2-19b6).
7. Measure the distance in divisions between the reference line and the point of the waveform to be measured (para 2-19b7).

**NOTE:** For an example see figure 2-9.

8. Multiply the distance measured in performance measure 7 by the deflection factor and attenuation of probe to find the DC voltage (para 2-19b8).

**REFERENCES:** FM 9-59  
NAVELEX 0969-161-9020

093-420-1131

PERFORM AMPLITUDE COMPARISON MEASUREMENTS WITH THE  
AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to make amplitude comparison measurements. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete the amplitude comparison measurement procedures.
2. Find the correct amplitude of the signal.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE  
MEASURES:**

1. Connect a reference signal to the vertical amplifier input jack (para 2-19c1).
2. Set the dual time base sweep rate controls to display several cycles of the signal (para 2-19c2).
3. Adjust the vertical amplifier deflection factor controls (VOLTS/DIV and VARIABLE) to give a display of several complete divisions (para 2-19c3).
4. Remove the reference signal from the vertical amplifier input jack (para 2-19c4).
5. Connect signal to be measured to the vertical amplifier input jack (para 2-19c4).
6. Set the vertical amplifier VOLTS/DIV switch for sufficient vertical deflection to make an accurate measurement (para 2-19c5).
7. Measure the vertical deflection in divisions and calculate the amplitude of the unknown signal (para 2-19c6).

**NOTE:** For an example see paragraph 2-19c.

**REFERENCES:** FM 9-59  
NAVELEX 0969-161-9020

093-420-1132

PERFORM TIME COMPARISON MEASUREMENTS USING THE  
AN/USM-281C OSCILLOSCOPE

- CONDITIONS: Your section chief has told you to setup the AN/USM-281C oscilloscope to make time comparison measurements. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.
- STANDARDS: Standards for this task will be met when you do the following:
1. Complete the time comparison measurement procedures.
  2. Find the time period of the signal.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Connect a reference signal to the vertical amplifier input jack (para 2-19d1).
  2. Set the vertical amplifier VOLT/DIV switch for four or five divisions of deflection (para 2-19d2).
  3. Set dual time base TIME/DIV or DLY TIME switch and adjust VARIABLE potentiometer so that one cycle of the referenced signal covers an exact number of divisions.
- NOTE: Do not adjust VARIABLE potentiometer after finding the right sweep rate (para 2-19d3).
4. Disconnect reference signal from the vertical amplifier input jack, and connect signal to be measured to the same jack (para 2-19d4).
  5. Set the TIME/DIV or DLY TIME switch for a sufficient cycle period to make an accurate measurement (para 2-19d5).
- NOTE: Do not adjust VARIABLE potentiometer.
6. Measure the period for one cycle in divisions and calculate the time (para 2-19d6).
- NOTE: For an example see paragraph 2-19c.
- REFERENCES: FM 9-59  
NAVELEX 0969-161-9020

093-420-1133

# MEASURE THE TIME DURATION OF A SIGNAL USING THE AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to setup the AN/USM-281C oscilloscope to measure the time duration of a signal. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete the time duration measurement procedures.
2. Find the correct time duration of the signal.
3. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Connect a signal to the vertical amplifier input jack (para 2-19e1).
2. Set the vertical amplifier deflection factor switch for about four divisions amplitude of the waveform (para 2-19e2).
3. Set the dual time base triggering control for a stable display (para 2-19e3).
4. Set dual time base TIME/DIV or DLY TIME switch to a sweep rate that gives a display less than eight divisions wide between the time measurement points (para 2-19e4).
5. Adjust vertical amplifier position control to move the time measurement points on the waveform to the center of the horizontal line (para 2-19e5).
6. Adjust dual time base position control to move the time measurement points to within the center eight divisions of the grid (para 2-19e6).

**NOTE:** Make sure that VARIABLE potentiometer is set all the way to the right.

7. Measure the distance in divisions between the time measurement points (para 2-19e7).
8. Multiply the distance measured in performance measure 7 by the setting on the TIME/DIV or DLY TIME switch to find the duration (para 2-19e8).

**NOTE:** For an example see paragraph 2-19e.

## REFERENCES:

FM 9-59  
NAVELEX 0969-161-9020

093-420-1134

DETERMINE THE FREQUENCY OF A SIGNAL USING THE  
AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to setup the AN/USM-281C oscilloscope to determine the frequency of a signal. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

STANDARDS: Standards for this task will be met when you do the following:

1. Complete the time duration measurement procedures.
2. Find the correct frequency of the signal.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Measure the time duration of one cycle (para 2-19e).  
2. Find frequency by taking reciprocal of time duration (para 2-19f2).

NOTE: For an example see paragraph 2-19f.

REFERENCES: FM 9-59  
NAVELEX 0969-161-9020

093-420-1135

## MEASURE THE RISE TIME OF A SIGNAL USING THE AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to set up the AN/USM-281C oscilloscope to measure the rise time of a signal. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete rise time measurement procedures.
2. Find the rise time of the signal.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Connect a signal to the vertical amplifier input jack (para 2-19g1).
2. Set the vertical amplifier deflection factor controls (VOLTS/DIV and VARIABLE) to give a display of several complete divisions in amplitude (para 2-19g2).

**NOTE:** Do not adjust VARIABLE potentiometer after obtaining the desired deflection.

3. Adjust the vertical amplifier position control so the display is centered on the center horizontal line of the grid (para 2-19g3).
4. Set the dual time base triggering controls for a stable display (para 2-19g4).

**NOTE:** Make sure the VARIABLE potentiometer is set all the way to the right.

5. Set the dual time base time switch for a sweep rate less than eight divisions wide between 10 percent and 90 percent points of waveform (para 2-19g5).
6. Determine 10 percent and 90 percent points on the waveform (para 2-19g6).
7. Adjust dual time base position control to move the 10 percent point of the waveform to the second vertical line of the grid (para 2-19g7).
8. Measure the horizontal distance in divisions between 10 percent and 90 percent points (para 2-19g8).
9. Multiply the distance measured in performance measure 8 by the TIME/DIV or DLY TIME switch setting (para 2-19g9).

**NOTE:** For an example see paragraph 2-19g.

**REFERENCES:** FM 9-59

NAVELEX 0969-161-9020



093-420-1136

PERFORM DELAYED SWEEP MEASUREMENTS USING THE AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to set up the AN/USM-281C oscilloscope to make delayed sweep measurements. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

STANDARDS: Standards for this task will be met when you do the following:

1. Complete the delayed sweep measurement procedures.
2. Find the correct delay time.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Connect a signal to the vertical amplifier input jack (para 2-19h1).
2. Set the vertical amplifier deflection factor switch to give a display of four divisions in amplitude (para 2-19h2).

NOTE: Make sure VARIABLE potentiometer is set all the way to the right.

3. Set the dual time base triggering controls for a stable display (para 2-19h3).
4. Set the dual time base TIME/DIV or DLY TIME switch for a sweep rate that will give a display of eight divisions between pulses (para 2-19h4).
5. Set the dual time base delayed time/division switch to a setting 1/100 of the TIME/DIV or DLY TIME switch setting and pull the delayed time/division switch out to stop (para 2-19h5).

NOTE: This will produce a trace with the small segment (0.1 division in length) with more intensity than the rest of the trace.

6. Turn the DELAY TIME MULT dial to move the intensified portion of the trace to the leading edge of the first pulse (para 2-19h6).

NOTE: The position of the intensified portion of the pulse must be clear enough to identify the like portion of the second pulse in performance measure 9 for the right measurement.

093-420-1136 (continued)

7. Press the delayed-time/division switch in (para 2-19h7).
8. Set the DELAY TIME MULT dial to move the leading edge of the pulse to the center of the vertical grid line. Write down exact setting of the dial (para 2-19h8).
9. Turn the DELAY TIME MULT dial to the right until the leading edge of the second pulse is set at the same point as the first pulse in performance measure 6. Write down the exact setting of the dial (para 2-19h9).
10. Subtract the first dial setting from the second and multiply by the TIME/DIV or DLY TIME switch setting (para 2-19h10).

NOTE: For an example see paragraph 2-19h.

## REFERENCES:

FM 9-59  
NAVELEX 0969-161-9020

093-420-1137

PERFORM DELAYED SWEEP MAGNIFICATION USING THE AN/USM-281C OSCILLOSCOPE

**CONDITIONS:** Your section chief has told you to set up the AN/USM-281C oscilloscope to make a delayed sweep measurement. You have been told to enlarge the delayed sweep by doing the sweep magnification steps. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Complete the delayed sweep magnification procedures.
2. Find the correct sweep magnification.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Connect a signal to the vertical amplifier input jack (para 2-19i1).
2. Set the vertical amplifier deflection factor switch to give a display of four divisions in amplitude (para 2-19i2).

**NOTE:** Make sure the VARIABLE potentiometer is set all the way to the right.

3. Set the dual time base triggering controls for a stable display (para 2-19i3).
4. Set the TIME/DIV or DLY TIME switch for a sweep rate that will give a display of a complete waveform (para 2-19i4).
5. Pull the delayed time/division switch out to stop (para 2-19i5).

**NOTE:** Make sure the dual time base DLY'D TRIG potentiometer is turned all the way to the right.

6. Turn the DELAY TIME MULT dial to position the start of the intensified portion of the trace at the start of the display portion to be magnified (para 2-19i7).
7. Set the delayed time/division switch to a setting that will intensify the full portion of the trace to be magnified (para 2-19i8).
8. Press the delayed time/division switch in to stop (para 2-19i9).

093-420-1137 (continued)

9. Divide the TIME/DIV or DLY TIME switch setting by the delayed time/division switch setting (para 2-19i10).

NOTE: For an example see paragraph 2-19i.

REFERENCES:

FM 9-59  
NAVELEX 0969-161-9020

093-420-1138

PERFORM PULSE JITTER MEASUREMENTS USING THE AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to setup the AN/USM-281C oscilloscope to make pulse jitter measurements. You will do this task on-site or in a maintenance shop area. You will need NAVELEX 0969-161-9020.

STANDARDS: Standards for this task will be met when you do the following:

1. Complete the pulse jitter measurement procedures.
2. Find the right pulse jitter of the signal.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Connect a signal to the vertical amplifier input jack (para 2-19 1 1).
2. Set the vertical amplifier deflection factor to give a display of about four divisions in amplitude (para 2-19 1 2).
3. Adjust the dual time base triggering controls for a stable display (para 2-19 1 3).
4. Set the dual time base TIME/DIV or DLY TIME switch to a sweep rate that gives a display of a complete waveform (para 2-19 1 4).

NOTE: See figure 2-14a.

5. Pull the dual time base delay time/division switch to stop (para 2-19 1 5).
6. Turn the dual time base DELAY TIME MULT potentiometer to position the start of the intensified portion of the trace at start of display portion to be magnified (para 2-19 1 6).
7. Set the dual time base delayed time/division switch to a setting that will highly intensify the full portion of the trace to be magnified (para 2-19 1 7).
8. Press the delayed time/division switch in to stop (para 2-19 1 8).

NOTE: Slight readjustment of dual time base main triggering level control may be necessary to produce a stable display.

093-420-1138 (continued)

9. Measure amount of the horizontal movement (jitter)  
(para 2-19 1 9).

NOTE: Make sure both vertical amplifier and dual time  
base VARIABLE potentiometers are set all the way  
to the right.

10. Find the pulse jitter time by multiplying the  
distance measured in performance measure 9 by the  
delayed time/division switch setting (para 2-19 1 10).

NOTE: For an example see paragraph 2-19 1.

REFERENCES:

FM 9-59  
NAVELEX 0969-161-9020

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-420-1140

OPERATE THE CALIBRATOR STANDARD

**CONDITIONS:** Your section chief told you to operate the calibrator standard to measure AC, DC, VRF, current and resistance. Do this task on-site or in a maintenance shop area. Use publications listed in references.

**STANDARDS:** Standards are met when you do the following:

1. Correctly set up the meter to make AC, DC, VRF, current and resistance measurements.
2. Find the correct voltage, current and resistance.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** **NOTE:** If working in a PIP unit, use PIP references. If working in an IHAWK unit, use IHAWK references.

1. Do pre-energizing steps (para 2-9).
2. Do energizing steps (para 2-10).
3. Choose the mode you will use (para 2-11b).
  - a. AC volts
  - b. DC volts
  - c. VRF
  - d. Current
  - e. Resistance
4. Connect test leads (para 2-11c).
5. Write down reading (para 2-11c).
6. Do shut-down steps (para 2-13).

|                    |                       |                         |
|--------------------|-----------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b> | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59               | FM 9-59                 |
|                    | TM 9-4935-1548-14     | TM 9-4935-548-14        |

093-420-1141

## OPERATE THE TS-505 ELECTRONIC MULTIMETER

- CONDITIONS:** Your section chief has told you to use the TS-505 electronic multimeter to measure AC, DC and resistance. You will do this task on-site or in a maintenance shop area. You will need TM 11-6625-239-12.
- STANDARDS:** Standards for this task will be met when you do the following:
1. Set up the meter to make AC, DC, and resistance measurements.
  2. Find the correct voltage and resistance.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Do the starting procedures (para 14).
  2. Choose the mode you will use (para 15 thru 20).
    - a. DC volts
    - b. AC volts
    - c. Ohms (resistance)
  3. Write down the reading.
  4. Do the shut down procedure (para 22).
- REFERENCES:** FM 9-59  
TM 11-6625-239-12



093-420-1142

# OPERATE THE AN/PSM-6 MULTIMETER

**CONDITIONS:** Your section chief has told you to use the AN/PSM-6 multimeter to measure AC, DC, resistance and current. You will do this task on-site or in a maintenance shop area. You will need TM 11-6625-475-10.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Set up the meter to make AC, DC, resistance and current measurements.
2. Find the correct voltage, resistance and current.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE  
MEASURES:**

1. Take the cover off and plug in test leads.
2. Check the battery (para 18).
3. Select the correct mode and do the measurements as required for:
  - a. DC voltage (para 19 and 20).
  - b. AC voltage (para 21).
  - c. Resistance (para 24).
  - d. Current (para 23 or 26).
4. Unplug the leads and put the cover back on.

**NOTE:** Do not leave the function switch in the ohms position.

**REFERENCES:** FM 9-59  
TM 11-6625-475-10

093-420-1143

## OPERATE THE TV-7/U ELECTRON TUBE TEST SET

**CONDITIONS:** Your section chief has told you to check some tubes to see if they are bad. You must use the TV-7/U tube tester. You will do this task on-site or in a maintenance shop area. You will need TM 11-6625-274-12.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Do the performance measures below in sequence without error.
2. Determine if the tube is good or bad.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE  
MEASURES:**

1. Do the starting steps (para 17a thru f).

**NOTE:** Do not put in a tube until all controls have been set IAW the instructions.

2. Operate as required (para 18a thru e).
3. Do filament continuity step, 12 volt filament tubes (para 19a thru n).
4. Do meter reading steps (para 20).
5. Do gas test (para 21a thru g).
6. Do noise test (para 22a thru i).
7. Do panel lamp test check (para 23a thru e).
8. Do test for special type tubes (para 24a thru d).
9. Do test for subminiature tubes, if necessary (para 25a thru e).
10. Do stopping steps (para 26a thru f).

**REFERENCES:** FM 9-59  
TM 11-6625-274-12

093-420-1144

OPERATE THE ZM21A/U OHMMETER

- CONDITIONS: Your section chief has given you a DA Form 2407 for an intrasystem problem, and told you to operate the ohmmeter ZM21A/U to help find the problem. You will do this task on-site or in a maintenance shop area. You will need TM 11-2050.
- STANDARDS: Standards for this task will be met when you do the following:
1. Correctly setup the ohmmeter.
  2. Find the correct resistance.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Do preoperational checks (chap 2, para 13).
  2. Operate the ohmmeter to make the following checks:
    - a. Guard connection (chap 2, para 14).
    - b. Insulation test of motors (chap 2, para 16).
    - c. Insulation test of transformers (chap 2, para 18).
    - d. Insulation test of power cables and wires (chap 2, para 21).
  3. Do the stopping steps (chap 2, para 29).
- REFERENCES: FM 9-59  
TM 11-2050

093-420-1145

## OPERATE THE 300M ELECTRONIC VOLTMETER

**CONDITIONS:** Your section chief has told you to use the 300M voltmeter. You will do this task on-site or in a maintenance shop area. You will need TM 9-4935-501-14.

**STANDARDS:** Standards for this task will be met when you do the following:

1. Correctly setup the voltmeter.
2. Find the correct voltage.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** **NOTE:** Be sure the power transformer, T-1, is wired for the line voltage shown in figure 3.

1. Plug the power cord to an AC source (para 5a).
2. Set ON/OFF switch to ON and let the meter warm up (para 5b).
3. Set range control to a scale higher than the expected reading (para 6a and b).
4. Connect voltage to be measured to the input jack (para 5c).
5. Set range control for an on-scale indication and read the voltage (para 5d).
6. Set ON/OFF switch to OFF (para 5b).

**REFERENCES:** FM 9-59  
TM 9-4935-501-14

093-420-1146

# OPERATE THE 45 KW GENERATOR

## CONDITIONS:

Your section chief has told you to operate the 45 kw generator. You will do this task in a maintenance shop area. You will need tools and equipment listed in the appropriate generator operator's manual. The manuals for different generators are as follows:

|                  |                                   |
|------------------|-----------------------------------|
| TM 5-6115-214-10 | Stewart and Stevenson Model 28100 |
| TM 5-6115-221-10 | Stewart and Stevenson Model 26200 |
| TM 5-6115-235-10 | Consolidated Diesel Model 4060    |
| TM 5-6115-274-12 | Stewart and Stevenson Model 52300 |
| TM 5-5321-2      | Cummins Engine Model JSGA-601     |

## STANDARDS:

Standards for this task will be met when you do the following:

1. Operate the generator according to the appropriate operator's manual.
2. Fill out DA Form 2408-1 correctly.
3. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Choose the correct manual for your type of generator.
2. Do before-operation checks.
3. Do during-operation checks.
4. Do after-operation checks.
5. Fill out DA Form 2408-1 (para 4-5, TM 38-750).

## REFERENCES:

FM 9-59  
TM 5-5321-2  
TM 5-6115-214-10  
TM 5-6115-221-10  
TM 5-6115-235-10  
TM 5-6115-274-12  
TM 38-750

093-420-1147

## OPERATE THE 60 KW GENERATOR

**CONDITIONS:** Your section chief has told you to operate the 60 kw generator. You will do this task in a maintenance shop area. You will need tools and equipment listed in the appropriate generator operator's manual. The operator's manuals for different generators are as follows:

|                  |                                         |
|------------------|-----------------------------------------|
| TM 5-6115-545-12 | DOD Model MEP-115A                      |
| TM 5-6125-209-15 | John R. Hollingsworth Co. Model JHMX605 |

**STANDARDS:** Standards for this task will be met when you do the following:

1. Operate the generator according to the appropriate operator's manual.
2. Fill out DA Form 2408-1 correctly.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Get the right manual for the generator you are operating.
2. Do starting checks.
3. Do operating checks.
4. Do stopping checks.
5. Fill out DA Form 2408-1 (para 4-5, TM 38-750).

**REFERENCES:**

FM 9-59  
TM 5-6115-545-12  
TM 5-6125-209-15  
TM 38-750

093-420-1148

PERFORM 45 KW GENERATOR EQUIPMENT SERVICEABILITY CRITERIA (ESC)

CONDITIONS: Your section chief has told you to do an ESC on the 45 kw generator. You will do this task in a maintenance shop area. You will need TM 5-6100-210-ESC and DA Form 2404.

STANDARDS: Standards for this task will be met when you do the following:

1. Obtain the correct ESC rating.
2. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Read the instructions (sec I, para 1 thru 3).
2. Do the test on the generator (sec II).
3. Record test results on DA Form 2404 (sec I, para 3g thru j).
4. Give DA Form 2404 to your section chief.

REFERENCES: FM 9-59  
TM 5-6100-210-ESC

093-420-1149

## PERFORM 60 KW GENERATOR EQUIPMENT SERVICEABILITY CRITERIA (ESC)

- CONDITIONS:** Your section chief has told you to do an ESC on the 60 kw generator. You will do this task in a maintenance shop area. You will need TM 5-6100-214-ESC and DA Form 2404.
- STANDARDS:** Standards for this task will be met when you do the following:
1. Obtain the correct ESC rating.
  2. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Read the instructions (sec I, para 1 thru 3f, TM 5-6100-214-ESC).
  2. Do the test (sec II, TM 5-6100-214-ESC).
  3. Record the test results on the DA Form 2404 (sec I, para 3g thru j, TM 5-6100-214-ESC).
  4. Give DA Form 2404 to your section chief.
- REFERENCES:** FM 9-59  
TM 5-6100-214-ESC



093-420-1150

TRANSPORT 45 OR 60 KW GENERATOR BY PRIME MOVER

CONDITIONS: Your section chief has told you to move a 45 or 60 kw generator by truck to a new location. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM 9-1425-525-12-1
2. Stake puller kit
3. Sledge hammer

STANDARDS: Standards for this task will be met when you do the following:

1. Correctly prepare the generator for movement.
2. Set up the generator at a new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the generator ready to move (para 3-41).  
2. Set up the generator (para 4-38 thru 4-40).

REFERENCES: FM 9-59  
TM 9-1425-525-12-1

093-420-1151

## PREPARE 45 OR 60 KW GENERATOR FOR TRANSPORT BY HELICOPTER

**CONDITIONS:** Your section chief has told you to get a 45 or 60 kw generator ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM 9-1425-252-12-1
2. Helicopter lifting kit
3. Stake puller kit
4. Sledge hammer

**STANDARDS:** Standards for this task will be met when you do the following:

1. Correctly prepare the generator for movement.
2. Set up the generator at a new location.
3. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Get the generator ready to move (para 3-42).
2. Set up the generator (para 4-41).

**REFERENCES:**

FM 9-59  
TM 9-1425-525-12-1

093-420-1155

PERFORM DAILY MAINTENANCE ON THE AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to do daily maintenance on the AN/USM-281C oscilloscope. You will do this task in a maintenance shop area. You will need the following:

1. NAVELEX 0969-161-9010
2. TM 38-750
3. Electrical Equipment Tool Kit TK-105/G
4. DA Form 2404

STANDARDS: Standards for this task will be met when you do the following:

1. Correctly perform daily maintenance.
2. Fill out DA Form 2404 correctly.

PERFORMANCE  
MEASURES:

1. Check item for completeness and general condition (table 4-2, NAVELEX 0969-161-9010).
2. Clean outside surfaces (table 4-2, NAVELEX 0969-161-9010).
3. Inspect inside receptacles (table 4-2, NAVELEX 0969-161-9010).
4. Inspect cathode ray tube face (table 4-2, NAVELEX 0969-161-9010).
5. Check knobs, controls and switches (table 4-2, NAVELEX 0969-161-9010).
6. Fill out DA Form 2404 (para 3-4, TM 38-750).
7. Give DA Form 2404 to your section chief.

REFERENCES: NAVELEX 0969-161-9010  
TM 38-750

093-420-1156

## PERFORM WEEKLY MAINTENANCE ON THE AN/USM-281C OSCILLOSCOPE

- CONDITIONS:** Your section chief has told you to do weekly maintenance on the AN/USM-281C oscilloscope. You will do this task in a maintenance shop area. You will need NAVELEX 0969-161-9010 and a flat tip screwdriver.
- STANDARDS:** Standards for this task will be met when you correctly perform weekly maintenance.
- PERFORMANCE MEASURES:**
1. Inspect outside cables (table 4-2).
  2. Inspect outside hardware (table 4-2).
  3. Inspect inside of oscilloscope (table 4-2).
  4. Tell your section chief you have completed weekly maintenance.
- REFERENCES:** NAVELEX 0969-161-9010

093-420-1157

PERFORM MONTHLY MAINTENANCE ON THE AN/USM-281C OSCILLOSCOPE

CONDITIONS: Your section chief has told you to do monthly maintenance on the AN/USM-281C oscilloscope. You will do this task in a maintenance shop area. You will need the following:

1. NAVELEX 0969-161-9010
2. Electrical Equipment Tool Kit TK-105/G
3. Cleaning material

STANDARDS: Standards for this task will be met when you correctly perform monthly maintenance.

PERFORMANCE MEASURES:

1. Clean inside and outside of equipment (table 4-2).
2. Check for the right operations in all modes (table 4-3).
3. Tell your section chief you have completed monthly maintenance.

REFERENCES: NAVELEX 0969-161-9010

093-420-1158

## PERFORM DAILY MAINTENANCE ON THE TS-505 ELECTRONIC MULTIMETER

**CONDITIONS:** Your section chief has told you to do daily maintenance on the TS-505 electronic multimeter. You will do this task in a maintenance shop area. You will need the following:

1. TM 11-6625-239-12
2. TM 38-750
3. Electrical Equipment Tool Kit TK-105/G
4. DA Form 2404

**STANDARDS:** Standards for this task will be met when you do the following:

1. Correctly perform daily maintenance.
2. Fill out DA Form 2404 correctly.

**PERFORMANCE  
MEASURES:**

1. Check cords, cables and wires (para 28.3, TM 11-6625-239-12).
2. Check handle, latch, and hinges (para 28.3, TM 11-6625-239-12).
3. Check exposed metal surfaces (para 28.3, TM 11-6625-239-12).
4. Fill out DA Form 2404 (para 3-4, TM 38-750).
5. Give DA Form 2404 to your section chief.

**REFERENCES:** TM 11-6625-239-12  
TM 38-750

093-420-1159

PERFORM WEEKLY MAINTENANCE ON THE TS-505 ELECTRONIC MULTIMETER

CONDITIONS: Your section chief has told you to do weekly maintenance on the TS-505 electronic multimeter. You will do this task in a maintenance shop area. You will need the following:

1. TM 11-6625-239-12
2. TM 38-750
3. Electrical Equipment Tool Kit TK-105/G
4. DA Form 2404

STANDARDS: Standards for this task will be met when you do the following:

1. Correctly perform weekly maintenance.
2. Fill out DA Form 2404 correctly.

PERFORMANCE  
MEASURES:

1. Check cables (para 28-3, TM 11-6625-239-12).
2. Check handle and latches (para 28-3, TM 11-6625-239-12).
3. Check metal surfaces (para 28-3, TM 11-6625-239-12).
4. Fill out DA Form 2404 (para 3-4, TM 38-750).
5. Give DA Form 2404 to your section chief.

REFERENCES: TM 11-6625-239-12  
TM 38-750

093-420-1160

## PERFORM MONTHLY MAINTENANCE ON THE TS-505 ELECTRONIC MULTIMETER

**CONDITIONS:** Your section chief has told you to do monthly maintenance on the TS-505 electronic multimeter. You will do this task in a maintenance shop area. You will need the following:

1. TM 11-6625-239-12
2. TM 38-750
3. Electrical Equipment Tool Kit TK-105/G
4. DA Form 2404

**STANDARDS:** Standards for this task will be met when you do the following:

1. Correctly perform monthly maintenance.
2. Fill out DA Form 2404 correctly.

**PERFORMANCE  
MEASURES:**

1. Check the seats of pluckout parts (para 28-4, TM 11-6625-239-12).
2. Check all jacks (para 28-4, TM 11-6625-239-12).
3. Check terminals on the transformer (para 28-4, TM 11-6625-239-12).
4. Check all terminal boards (para 28-4, TM 11-6625-239-12).
5. Check resistors and capacitors (para 28-4, TM 11-6625-239-12).
6. Check gaskets, insulators, bushings and sleeves (para 28-4, TM 11-6625-239-12).
7. Check inside of case (para 28-4, TM 11-6625-239-12).
8. Fill out DA Form 2404 (para 3-4, TM 38-750).
9. Give DA Form 2404 to your section chief.

**REFERENCES:** TM 11-6625-239-12  
TM 38-750



093-420-1161

PERFORM OPERATOR MAINTENANCE ON THE TV-7/U ELECTRON TUBE TEST SET

CONDITIONS: Your section chief has told you to do maintenance on the TV-7/U electron tube test set. You will do this task in a maintenance shop area. You will need the following:

1. TM 11-6625-274-12
2. Electrical Equipment Tool Kit TK-105/G
3. DA Form 2404

STANDARDS: Standards for this task will be met when you do the following:

1. Correctly perform operator maintenance.
2. Fill out DA Form 2404 correctly.

PERFORMANCE MEASURES:

1. Check cords, cable and wires (para 33, TM 11-6625-274-12).
2. Check for loose outside parts (para 33, TM 11-6625-274-12).
3. Check outside metal surfaces (para 33, TM 11-6625-274-12).
4. Check meters (para 35, TM 11-6625-274-12).
5. Fill out DA Form 2404 (para 3-4, TM 38-750).
6. Give DA Form 2404 to your section chief.

REFERENCES: . TM 11-6625-274-12  
TM 38-750

093-420-1162

## PERFORM OPERATOR MAINTENANCE ON THE ZM21A/U OHMMETER

- CONDITIONS:** Your section chief has told you to do maintenance on the ZM21A/U ohmmeter. You will do this task in a maintenance shop area. You will need TM 11-2050 and an Electrical Equipment Tool Kit TK-105/G.
- STANDARDS:** Standards for this task will be met when you correctly complete the operator maintenance checks.
- PERFORMANCE MEASURES:**
1. Check outside of unit (chap 3, para 34 thru 45).
  2. Check test leads (chap 3, para 34 thru 45).
  3. Check inside of unit for rust or corrosion (chap 3, para 34 thru 45).
  4. Check the unit carrying case (chap 3, para 34 thru 45).
  5. Tell your section chief you have completed operator maintenance.
- REFERENCES:** FM 9-59  
TM 11-2050

093-420-1163

PERFORM PREVENTIVE MAINTENANCE ON THE AN/PSM-6 MULTIMETER

- CONDITIONS: Your section chief has told you to do maintenance on the AN/PSM-6 multimeter. You will do this task in a maintenance shop area. You will need the following:
1. TM 11-6625-475-10
  2. TM 38-750
  3. Electrical Equipment Tool Kit TK-105/G
  4. DA Form 2404
- STANDARDS: Standards for this task will be met when you correctly perform preventive maintenance.
- PERFORMANCE MEASURES:
1. Check the multimeter to see if all parts are there (para 41, TM 11-6625-475-12).
  2. Check sides, face, and all surfaces for cracks (para 43, TM 11-6625-475-12).
  3. Check knobs and indicator (para 41, TM 11-6625-475-12).
  4. Watch the multimeter while in use.
  5. Fill out DA Form 2404 (para 3-4, TM 38-750).
- REFERENCES: TM 11-6625-475-12  
TM 38-750

093-420-1164

**PERFORM QUARTERLY MAINTENANCE ON THE TS-505 ELECTRONIC MULTIMETER**

**CONDITIONS:** Your section chief has told you to do a quarterly check on the TS-505 multimeter. You will do this task in a maintenance shop area. You will need DA Pam 310-4 and TM 11-6625-239-12.

**STANDARDS:** Standards for this task will be met when you correctly perform quarterly maintenance.

**PERFORMANCE MEASURES:**

1. Make sure all manuals are complete and up to date (DA Pam 310-4).
2. Check to see if new modification work orders (MWO) have been published (DA Pam 310-4).

**NOTE:** All urgent MWO's will be done immediately. All normal MWO's must be scheduled (TM 11-6625-239-12).

3. Check to see if all spare parts are in good condition and stored right (para 28-2, TM 11-6625-239-12).

**REFERENCES:**

DA Pam 310-4  
TM 11-6625-239-12

\* THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-420-1180

PERFORM THE HIGH FREQUENCY CONSOLE (HFC) SELF-TEST

CONDITIONS:

Your section chief told you to do an HFC self-test and gave you a DA Form 2407, with section I completed. Do this task on-site or in a maintenance shop area. Use the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30
2. Test accessories listed in table 3-3, TM 9-4935-540-40-1
3. Publications as listed in the references

STANDARDS:

Standards are met when you do the following:

1. Do correctly the HFC self-test.
2. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

NOTE: If working in a PIP unit, use PIP references.  
If working in an IHAWK unit, use IHAWK references.

1. Inspect the HFC (table 3-1, TM 9-4935-540-14-1).
2. Prepare the HFC for self-test (para 3-13, TM 9-4935-540-14-1).
3. Do the self-test (table 3-4, TM 9-4935-540-14-1).
4. Fill in section II, DA Form 2407 (para 3-11, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

PIP UNITS USE:

FM 9-59  
TM 9-4935-1540-14-1  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-4935-540-14-1  
TM 38-750

## PART 3

TASKS FOR ALL IMPROVED HAWK  
LAUNCHER AND MECHANICAL SYSTEMS REPAIRERS

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MISSILE SYSTEM

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093-424-1020

PERFORM UMBILICAL LEAKAGE CHECK

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to do the inter-unit umbilical cable leakage check. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's referenced
2. General mechanics tool kit
3. Ohmmeter ZM21A/U or ZM21B/U

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the cable and connectors (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for tests (para 2-3b, TM 9-1440-531-34-2).
3. Do the checks (para 2-3c, TM 9-1440-531-34-2).
4. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-2  
TM 38-750

093-424-1021

PERFORM MONTHLY MAINTENANCE ON IMPROVED LAUNCHER (ILCHR)

CONDITIONS: Your section chief has told you to do monthly maintenance on the Improved HAWK launcher. You will do this task on-site or in a maintenance shop area. You will use TM 9-1440-531-12-1 and general mechanics tool box.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Inspect launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Do the checks (table 3-3, TM 9-1440-531-12-1).
3. Tell your section chief when you finish the task.

REFERENCES: FM 9-59  
TM 9-1440-531-12-1

093-424-1022

REPLACE PUMP ASSEMBLY

- CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad pump assembly. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Get the launcher ready to take off the bad part (para 5-37a (1) thru (3), TM 9-1440-531-12-1).
  3. Take off the bad pump (para 5-37a (4), TM 9-1440-531-12-1).
  4. Put on the good pump (para 5-37b, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:**
- FM 9-59
  - TM 9-1440-531-12-1
  - TM 38-750

093-424-1023

REPLACE BASE DISTRIBUTION BOX

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace a bad base distribution box. This task will be done on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and a general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-20a, (1) thru (5), TM 9-1440-531-12-1).
3. Put on the good part (para 5-20b (1) thru (6), TM 9-1440-531-12-1).
4. Test the new part (table 3-15 thru 3-17, TM 9-1440-531-12-1).
5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1024

REPLACE BLOWER ASSEMBLY

**CONDITIONS:** You have been given a DA Form 2407 by your section chief and told to replace a blower assembly of an Improved HAWK launcher. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

**STANDARDS:** You will do all performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off bad assembly (para 5-25a, TM 9-1440-531-12-1).
3. Put on new assembly (para 5-25b, TM 9-1440-531-12-1).
4. Check your work by doing test (table 3-15 thru 3-17, TM 9-1440-531-12-1).
5. Fill in DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
6. Give DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1025

REPLACE ALINEMENT TELESCOPE AND FIRE CUTOUT ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad alinement telescope and fire cutout assembly. You will do this task on-site or in a maintenance shop area. You will need the following:
1. TM 9-1440-531-12-1
  2. TM 9-1440-531-34-2
  3. General Mechanics Tool Kit
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part and put on the good part (para 5-23.1a, TM 9-1440-531-12-1).
  3. Do the alinement test (para 3-2, TM 9-1440-531-34-2).
  4. Do the launcher checks (para 3-16 and 3-17, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 or the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59
  - TM 9-1440-531-12-1
  - TM 9-1440-531-34-2
  - TM 38-750

093-424-1026

REPLACE AZIMUTH DISTRIBUTION BOX

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace a bad azimuth distribution box. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Take out the bad part (para 5-33a, TM 9-1440-531-12-1).
3. Put in the good part (para 5-33b, TM 9-1440-531-12-1).
4. Fill in DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750



093-424-1027

REPLACE ELECTRONIC EQUIPMENT RACK

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace an electronic equipment rack on the Improved HAWK launcher. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59 and para 5-1, TM 9-1440-531-12-1).

PERFORMANCE  
MEASURES:

1. Check Improved HAWK launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off bad rack (para 5-21a, TM 9-1440-531-12-1).
3. Put on new rack (para 5-21b, TM 9-1440-531-12-1).
4. Check your work by doing a test (table 3-15 thru 3-17, TM 9-1440-531-12-1).
5. Fill in DA Form 2407, block 20 and 25 (para 3-7, TM 38-750).
6. Give DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1028

# REPLACE MAIN HYDRAULIC SYSTEM FILTER

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad main hydraulic system filter. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59 and para 5-1, TM 9-1440-531-12-1).

**PERFORMANCE MEASURES:**

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-38a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-38b, TM 9-1440-531-12-1).
4. Test the new part (para 5-38c, TM 9-1440-531-12-1).
5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
 TM 9-1440-531-12-1  
 TM 38-750

093-424-1029

# REPAIR ENERGIZING AND POWER CIRCUITS

**CONDITIONS:** Your section chief has told you to fix the energizing and power circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's listed in the references
2. GM; FM, Electronic Tool Kit (HAWK) (A05)
3. Multimeter, AN/PSM-6

**STANDARDS:** All performance measures will be done IAW the referenced manuals. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Inspect launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
3. Turn on the power (table 3-12, TM 9-1440-531-12-1).
4. Do the power distribution check (table 3-15, TM 9-1440-531-12-1).
5. Troubleshoot the item (table 8-4, TM 9-1440-531-12-2).
6. Do the mid-check (table 3-10, TM 9-1440-531-12-1).
7. Fix the energizing and power circuits (chap 2, TM 9-1425-525-12-4).
8. Check your work by doing test steps (table 3-15, TM 9-1440-531-12-1).
9. Turn off the power (table 3-13, TM 9-1440-531-12-1).
10. Tell your section chief that the item has been fixed.

**REFERENCES:**

- FM 9-59
- TM 9-1425-525-12-4
- TM 9-1440-531-12-1
- TM 9-1440-531-12-2

093-424-1030

## REPAIR SYNCHRO CIRCUITS

## CONDITIONS:

Your section chief has told you to fix the synchro circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's listed in the references
2. General Mechanic FM Tool Kit A05
3. AN/PSM-6 Multimeter

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before turning the power on (table 3-9, TM 9-1440-531-12-1).
3. Turn on the power (table 3-12, TM 9-1440-531-12-1).
4. Troubleshoot the item (para 3-5, 3-16 and 3-17, TM 9-1440-531-12-2).
5. Do the mid-check (table 3-10, TM 9-1440-531-12-1).
6. Repair the synchro circuits (chap 3, TM 9-1440-531-12-2).
7. Check your work by doing steps 2 and 3 (table 3-16, TM 9-1440-531-12-1).
8. Turn off power (table 3-13, TM 9-1440-531-12-1).
9. Tell section chief when done.

## REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2

093-424-1031

# REPAIR POSITIONING CIRCUITS

## CONDITIONS:

Your section chief has told you to fix the positioning circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's listed in the references
2. General Mechanics FM, Tool Kit A05
3. AN/PSM-6 Multimeter

## STANDARDS:

All performance measures will be done IAW the referenced manuals. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Inspect launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
3. Turn on the power (table 3-12, TM 9-1440-531-12-1).
4. Do the positioning check (table 3-16, TM 9-1440-531-12-1).
5. Troubleshoot the circuits (chap 4 and table 8-5, TM 9-1440-531-12-2).
6. Do the mid-checks (table 3-10, TM 9-1440-531-12-1).
7. Fix the positioning circuits (chap 2, TM 9-1425-525-12-4).
8. Check your work by doing the test steps (table 3-16, TM 9-1440-531-12-1).
9. Turn off the power (table 3-13, TM 9-1440-531-12-1).
10. Tell your section chief that the item has been fixed.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2

093-424-1032

## REPAIR SHOOT-AROUND CIRCUITS

## CONDITIONS:

Your section chief has told you to fix the shoot-around console. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's listed in the references
2. General Mechanics FM, Tool Kit A-05
3. Multimeter AN/PSM-6

## STANDARDS:

All performance measures will be done IAW the referenced manuals. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before your turn on the power (table 3-9, TM 9-1440-531-12-1).
3. Turn on the power (table 3-12, TM 9-1440-531-12-1).
4. Do the shoot-around checks (table 3-16, (11), TM 9-1440-531-12-1).
5. Do the fault isolation checks (table 8-5, TM 9-1440-531-12-2).
6. Do the mid-checks (table 3-10, TM 9-1440-531-12-1).
7. Fix the shoot-around circuits (chap 2, TM 9-1440-525-12-4).
8. Check your work by doing the test steps (table 3-16, TM 9-1440-531-12-1).
9. Turn off the power (table 3-13, TM 9-1440-531-12-1).
10. Tell your section chief that the item has been fixed.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2

093-424-1033

# REPAIR FIRING AND CONTROL CIRCUITS

## CONDITIONS:

Your section chief has told you to fix the firing and control circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM's listed in the references
2. General Mechanic FM, Tool Kit A05
3. Multimeter AN/PSM-6

## STANDARDS:

All performance measures will be done IAW the referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before turning power on (table 3-9, TM 9-1440-531-12-1).
3. Turn on the power (table 3-12, TM 9-1440-531-12-1).
4. Do the firing and control system check (table 3-17, TM 9-1440-531-12-1).
5. Do the fault isolation check (table 8-6, TM 9-1440-531-12-2).
6. Fix the firing and control circuits (chap 2, TM 9-1425-525-12-4).
7. Check your work by doing a test (table 3-17, TM 9-1440-531-12-1).
8. Turn off power (table 3-13, TM 9-1440-531-12-1).
9. Tell section chief that the item has been fixed.

## REFERENCES:

FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1440-531-12-1  
 TM 9-1440-531-12-2

093-424-1034

# REPLACE MAIN HYDRAULIC SYSTEM CHECK VALVE

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad main hydraulic system check valve. This task can be done on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take the bad part off (para 5-36a, TM 9-1440-531-12-1).
  3. Put the good part on (para 5-36b, TM 9-1440-531-12-1).
  4. Test the new part (table 3-16, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750



093-424-1036

REPLACE PRESSURE VALVE

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad pressure valve. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-41a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-41b, TM 9-1440-531-12-1).
4. Test the new part (table 3-16, TM 9-1440-531-12-1).
5. Fill out blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1037

REPLACE PRESSURE REGULATOR VALVE

- CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad pressure regulator valve. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take the bad part off (para 5-55a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-55b, TM 9-1440-531-12-1).
  4. Test the new part (table 3-16, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:**
- FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1038

REPLACE MAIN HYDRAULIC SYSTEM RELIEF VALVE

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad main hydraulic system relief valve. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-39a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-39b, TM 9-1440-531-12-1).
4. Test the new part (table 3-16, TM 9-1440-531-12-1).
5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1039

REPLACE FLUID PRESSURE FILTER AND/OR REGULATOR VALVE

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad fluid pressure filter and a regulator valve. You will do this task on-site or in a maintenance shop area. You will need TM's listed in the references and general mechanics tool kit.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-54a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-54b, TM 9-1440-531-12-1).
4. Test the new part (table 3-16, TM 9-1440-531-12-1).
5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
 TM 9-1440-531-12-1  
 TM 38-750

093-424-1040

REPLACE ALINEMENT SYNCHRO CONTROL TRANSFORMER

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad alinement synchro control transformer. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-31a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-31b, TM 9-1440-531-12-1).
  4. Test the new part (table 3-15, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1041

REPLACE MANUAL AZIMUTH MOVEMENT VALVE

- CONDITIONS: Your section chief has given you a DA Form 2407 (Maintenance Request) and told you to replace a bad manual azimuth valve. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-43a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-43b, TM 9-1550-531-12-1).
  4. Test the new part (table 3-16, TM 9-1440-531-12-1).
  5. Fill out blocks 20 and 25 of the DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1042

REPLACE FORWARD OUTRIGGER SWIVEL FITTING

CONDITIONS:

Your section chief has given you a DA Form 2407 (Maintenance Request) and told you to replace a forward outrigger swivel fitting. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-6, TM 9-1440-531-12-1).
3. Put the good part on the launcher (para 5-6, TM 9-1440-531-12-1).
4. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1043

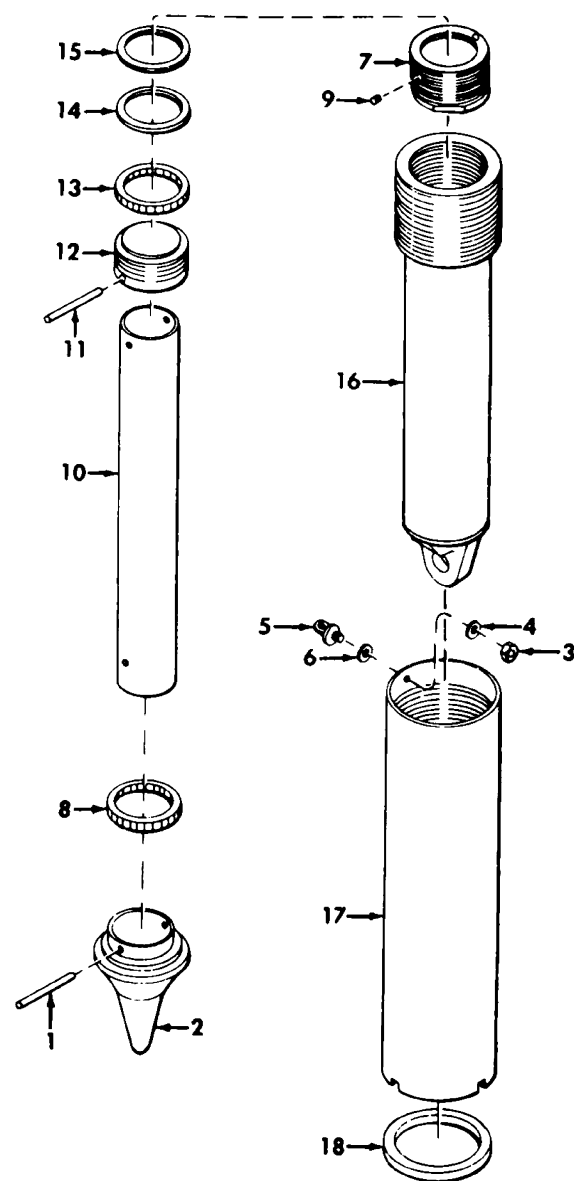
## REPLACE LEVELING CYLINDERS

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix a bad leveling cylinder. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take the bad part off (para 5-7a, TM 9-1440-531-12-1).
  3. Put the good part on (para 5-7a, TM 9-1440-531-12-1).
  4. Check your work by doing a test (para 5-7b, TM 9-1440-531-12-1).
  5. Fill out DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  6. Take DA Form 2407 to production control.

(See figure on page 2-190)



- 1-Pin
- 2-Pointed rod fitting
- 3-Hexagon nut
- 4-Flat washer
- 5-Eyebolt
- 6-Flat washer
- 7-Threaded bushing
- 8-Felt ring
- 9-Thread locking plug
- 10-Rod
- 11-Pin
- 12-Rod head
- 13-Felt ring
- 14-Ring
- 15-Preformed packing
- 16-Barrel assembly
- 17-Sleeve assembly
- 18-Seal

*Leveling cylinder.*

## REFERENCES:

FM 9-59  
 TM 9-1440-531-12-1  
 TM 38-750

093-424-1044

REPLACE ACCUMULATOR AIR FILTER VALVE

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad accumulator air filter valve. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-44a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-44b, TM 9-1440-531-12-1).
  4. Check the repair (table 3-15, TM 9-1440-531-12-1).
  5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1045

REPLACE LEVELING CYLINDER VALVES

CONDITIONS:

Your section chief has given you a DA Form 2407 (Maintenance Request) and told you to replace a bad leveling cylinder valve. You will do this task on-site or in a maintenance shop area. You will need TM's listed in the references and general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-27a, TM 9-1440-531-12-1).
3. Put on good part, (para 5-27b, TM 9-1440-531-12-1).
4. Check out the repair (para 4-23 (17), (18), (19), TM 9-1425-525-12-1 and para 7-5a (19) TM 9-1440-531-12-1).
5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-1  
TM 9-1440-531-12-1  
TM 38-750

093-424-1046

REPLACE HYDRAULIC OIL COOLER

- CONDITIONS:** Your section chief has given you a DA Form 2407 (Maintenance Request) and told you to replace a bad hydraulic oil cooler. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Check the launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-52a and b, TM 9-1440-531-12-1).
  3. Put on good part (para 5-52b, TM 9-1440-531-12-1).
  4. Test the new part (para 5-52c, d and e, TM 9-1440-531-12-1).
  5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:**
- FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1047

REPLACE HATCH RAISING CYLINDER

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a hatch raising cylinder. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check the launcher (table 3-1 and 3-2, TM 9-1440-531-12-1).
2. Take off the bad part (para 4-46a, TM 9-1440-531-12-1).
3. Put the good part on (para 5-46b, TM 9-1440-531-12-1).
4. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
5. Take the DA Form 2407 to production control.

REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1048

REPAIR BOOM SHOCK ABSORBER

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a boom shock absorber on an Improved HAWK launcher. You will do this task on-site or in a maintenance shop area. You will need the TM's listed in the references and general mechanics tool kit.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:**
1. Check the launcher (table 3-1, and 3-2, TM 9-1440-531-12-1).
  2. Take off the bad shock absorber (fig 5-19 TM 9-1440-531-12-1).
  3. Disassemble shock absorber (fig 4-4b, TM 9-1440-531-34-2).
  4. Fix the shock absorber (fig 4-4, TM 9-1440-531-34-2).
  5. Put the shock absorber together (para 4-4c, TM 9-1440-531-34-2).
  6. Put the shock absorber on the launcher (fig 5-19, TM 9-1440-531-12-1).
  7. Check your work by doing a test (table 3-16, TM 9-1440-531-12-1).
  8. Fill out DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  9. Take DA Form 2407 to production control.

**REFERENCES:**  
FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-1049

REPLACE TEMPERATURE CONTROL UNIT

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace a bad temperature control unit. This task will be done on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-56a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-56b, TM 9-1440-531-12-1).
4. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
5. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1050

REPLACE HAND PUMP ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad hand pump assembly. You will do this task on-site or in a maintenance shop area. You will need TM's listed in references and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-47a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-47b, TM 9-1440-531-12-1).
  4. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  5. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1440-531-12-1  
TM 38-750



093-424-1051

REPLACE BASE HYDRAULIC PANEL MANIFOLD

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad hydraulic panel manifold. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad part (para 5-30a, TM 9-1440-531-12-1).
  3. Put on the good part (para 5-30b, TM 9-1440-531-12-1).
  4. Test the new part (table 3-16, TM 9-1440-531-12-1).
  5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1053

# REPLACE RESTRICTOR ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad restrictor assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. TM 9-1440-531-12-1
2. General Mechanics Tool Kit (A-03)

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the bad part (para 5-42a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-42b, TM 9-1440-531-12-1).
4. Test the new part (table 3-16, TM 9-1440-531-12-1).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1054

REPLACE BOOM SNUBBER

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad boom snubber. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off bad snubber (para 5-51b, TM 9-1440-531-12-1).
3. Put on new snubber (para 5-51b, TM 9-1440-531-12-1).
4. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
5. Give DA Form 2407 to your section chief.

REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1056

REPLACE ELECTRICAL POWER UNIT POWER SUPPLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a bad electrical power unit power supply. You will do this task on-site or in a maintenance shop area. You will need TM 9-1440-531-12-1 and general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take out the bad power supply (para 5-23a, TM 9-1440-531-12-1).
  3. Put on new power supply (para 5-23a, TM 9-1440-531-12-1).
  4. Check your work by doing a test (tables 3-15 thru 3-17, TM 9-1440-531-12-1).
  5. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  6. Give DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1057

REPLACE DRAWBAR ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad drawbar assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and the TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off bad part (para 5-8a, TM 9-1440-531-12-1).
  3. Put on good part (para 5-8c and d, TM 9-1440-531-12-1).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-1058

# REPLACE MAIN RESERVOIR THERMOSTATIC SWITCH ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad main reservoir thermostatic switch assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:**
1. Check launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off bad part (para 5-35a, TM 9-1440-531-12-1).
  3. Put good part on launcher (para 5-35b, TM 9-1440-531-12-1).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.

**REFERENCES:**  
 FM 9-59  
 TM 9-1440-531-12-1  
 TM 38-750

093-424-1059

PERFORM PERIODIC TEST ON LAUNCHER PANEL METERS

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to do the periodic test on the launcher panel meters. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect major item (tables 3-1 and 3-2, TM 9-1440-531-12-1).
  2. Do the energizing steps (para 2-9 and 2-10, TM 9-4935-548-14).
  3. Do the test steps (table 9-1, TM 9-4935-548-14).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1440-531-12-1  
TM 9-4935-548-14  
TM 38-750

093-424-1065

# REPLACE EXTENSION CYLINDER

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad extension cylinder. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:**
1. Check loader (table 2, sec III, TM 9-1450-500-10).
  2. Take off bad part (para 2-113a, TM 9-1450-500-20).
  3. Put on good part (para 2-113b, TM 9-1450-500-20).
  4. Do proof load test (para 5-21a and 5-24 thru 5-33, TM 9-1450-500-34).
  5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  6. Take DA Form 2407 to production control.

**REFERENCES:**

- FM 9-59
- TM 9-1450-500-10
- TM 9-1450-500-20
- TM 9-1450-500-34
- TM 38-750



093-424-1066

LOAD TEST LOADER TRANSPORTER

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to do the load test on the loader transporter. You will do this task in a maintenance shop area. You will need the following:

1. GM: FM - electromechanical tool kit
2. Proof-Loading Kit PN# 10943923, FSN 2540-921-5002
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect loader transporter (table 2, sec III, TM 9-1450-500-10).
2. Do the test steps (para 5-20 thru 5-33, TM 9-1450-500-34).
3. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
4. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

093-424-1067

REPLACE EXTENSION CYLINDER FLOW REGULATOR VALVE

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad extension cylinder flow regulator valve on a HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check loader transporter (table 2, sec III, TM 9-1450-500-10).
2. Take out bad regulator valve (para 5-37a, TM 9-1450-500-34).
3. Put in good regulator valve (para 5-37e, TM 9-1450-500-34).
4. Check your work by doing a test (para 5-37f, TM 9-1450-500-34; TM 9-1450-500-10).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

**REFERENCES:**

- FM 9-59
- TM 9-1450-500-10
- TM 9-1450-500-34
- TM 38-750

093-424-1068

REPLACE LATCH AND RELEASE SWITCH

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace a bad latch and release switch. This task will be done on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check latch and release switches (para 5-11b (4)a & b, TM 9-1450-500-34).
2. Take off the bad part (para 5-20c (4) (5), TM 9-1450-500-34).
3. Put on the good part (para 5-20c, (4) (5) TM 9-1450-500-34).
4. Check the loader (table 3-1, TM 9-1450-500-10).
5. Fill out the DA Form 2407, blocks 20 and 25 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

093-424-1069

REPLACE ROLL CONTROL VALVE AND ELEVATION CONTROL VALVE

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad roll control valve and elevation control valve on the HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check loader (table 2, sec III, TM 9-1450-500-10).
2. Take off bad part (para 5-46a, TM 9-1450-500-34).
3. Put on good part (para 5-46e, TM 9-1450-500-34).
4. Do load test (para 21a and 5-24 thru 5-33, TM 9-1450-500-34).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

093-424-1070

REPLACE HYDRAULIC PUMP AND PUMP DRIVE

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace a bad hydraulic pump and pump drive on a HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Extractor, FSN 5120-251-1525
3. Inserter, FSN 5120-710-7437
4. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check loader (table 2, sec III, TM 9-1450-500-10).
2. Take off bad part (para 5-36, TM 9-1450-500-34).
3. Put good part on loader (para 5-36, TM 9-1450-500-34).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

093-424-1071

REPLACE HOISTING BEAM SOLENOID

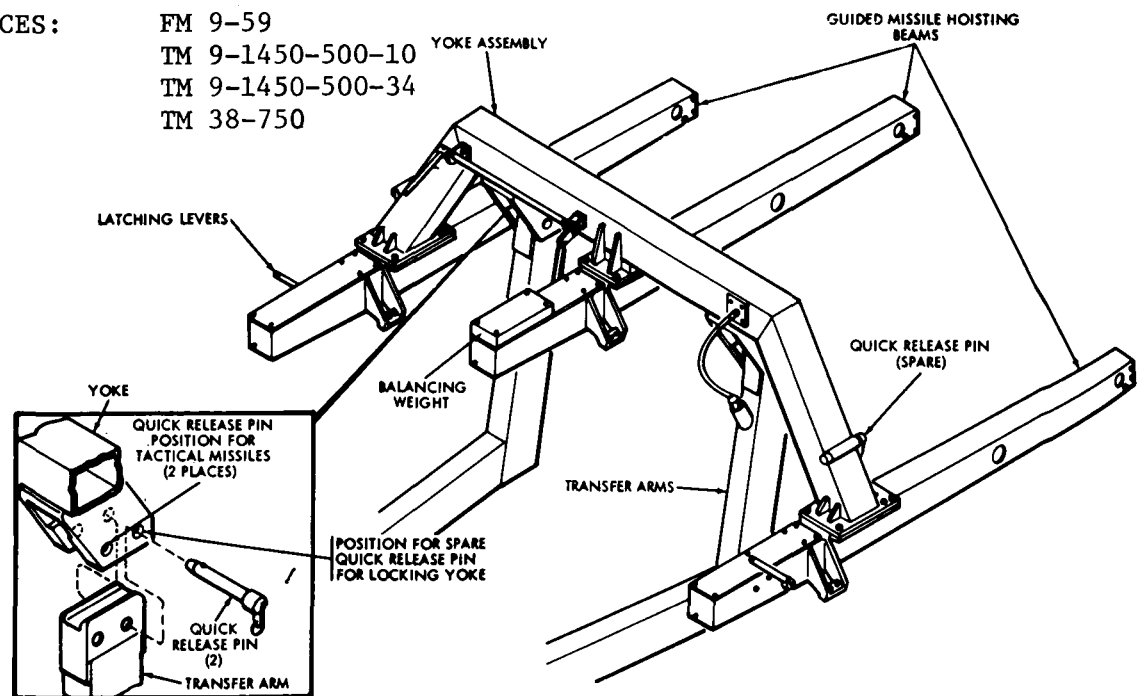
- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad hoisting beam solenoid on a HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check loader (table 2, sec III, TM 9-1450-500-10).
  2. Take off bad part (para 5-11b(3) and fig 5-11, TM 9-1450-500-34).
  3. Put new part on loader (para 5-11c(12) and fig 5-11, TM 9-1450-500-34).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59
  - TM 9-1450-500-10
  - TM 9-1450-500-34
  - TM 38-750

093-424-1072

## REPLACE YOKE ASSEMBLY

- CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad yoke assembly on a HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Check loader (table 2, sec III, TM 9-1450-500-10).
  2. Take off bad yoke assembly (para 5-3a and para 5a(3d), TM 9-1450-500-34).
  3. Put good yoke assembly on loader (para 5-3e, TM 9-1450-500-34).
  4. Test new yoke assembly (para 34b, TM 9-1450-500-34; TM 9-1450-500-10).
  5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  6. Take DA Form 2407 to production control.

- REFERENCES:**
- FM 9-59
  - TM 9-1450-500-10
  - TM 9-1450-500-34
  - TM 38-750



YOKE ASSEMBLY AND HOISTING BEAMS

093-424-1073

REPLACE ROLL AND AZIMUTH LOCKOUT SOLENOID VALVE  
AND AZIMUTH CONTROL VALVE

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad roll and azimuth lockout solenoid valve and azimuth control valve. You will do this task on-site or in a maintenance shop area. You will need an electromechanical tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check transporter (table 2, sec III, TM 9-1450-500-10).
2. Take off bad part (para 5-44a, TM 9-1450-500-34).
3. Put on good part (para 5-44a, TM 9-1450-500-34).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750



093-424-1074

REPLACE TRANSFER ARM LINK ASSEMBLY LIMIT SWITCH

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad transfer arm link assembly limit switch. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check transporter (table 2, sec III, TM 9-1450-500-10).
  2. Take out bad part (para 2-62b(1), TM 9-1450-500-20).
  3. Put in good part (para 2-62b(2), TM 9-1450-500-20).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-20  
TM 38-750

093-424-1075

REPLACE TRANSFER ARM ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace the transfer arm assembly on an Improved HAWK transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check transporter (table 2, sec III, TM 9-1450-500-10).
  2. Take off bad part (para 5-6a, TM 9-1450-500-34).
  3. Put on new part (para 5-6c, TM 9-1450-500-34).
  4. Check your work by doing a test (para 5-6d, TM 9-1450-500-34).
  5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  6. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59
  - TM 9-1450-500-10
  - TM 9-1450-500-20
  - TM 9-1450-500-34
  - TM 38-750

093-424-1076

REPLACE INDEX BOOM/LINK ASSEMBLY LIMIT SWITCH

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to change a bad index boom/link limit switch on an Improved HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check loader transporter (table 2, sec III, TM 9-1450-500-10).
  2. Take off bad switch (para 2-62c(1), TM 9-1450-500-20).
  3. Put on good switch (para 2-62c(2), TM 9-1450-500-20).
  4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-20  
TM 38-750

093-424-1077

# REPLACE AZIMUTH AND ROLL LIMIT SWITCH

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace a bad azimuth and roll limit switch on an Improved HAWK loader transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Check loader transporter (table 2, sec III, TM 9-1450-500-10).
2. Take off bad switch (para 2-62(1)a thru e, TM 9-1450-500-20).
3. Put on good switch (para 2-62(2), TM 9-1450-500-20).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1450-500-34  
TM 38-750

093-424-1078

REPLACE HOISTING BEAM

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace a bad hoisting beam. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanics tool kit
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check loader transporter (table 2, sec III, TM 9-1450-500-10).
2. Take off bad hoisting beam (para 5-5b, TM 9-1450-500-34).
3. Put on new hoisting beam (para 5-5d, TM 9-1450-500-34).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-20  
TM 9-1450-500-34  
TM 38-750

093-424-1079

REPLACE LINK ASSEMBLY

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad link assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanics tool kit
3. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check loader (table 2, sec III, TM 9-1450-500-10).
2. Take off bad part (para 5-14a, TM 9-1450-500-34).
3. Put on good part (para 5-14c, TM 9-1450-500-34).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

093-424-1080

REPLACE INDEX BOOM

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace the index boom on an Improved HAWK transporter. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check transporter (table 2, sec III, TM 9-1450-500-10).
2. Take off bad part (para 5-8a, TM 9-1450-500-34).
3. Put on good part (para 5-8c, TM 9-1450-500-34).
4. Test new boom (para 5-8d, TM 9-1450-500-34).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-34  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1085

PERFORM BACKLASH PROCEDURES ON THE IMPROVED HAWK  
CONTINUOUS WAVE ACQUISITION RADAR (ICWAR)

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to do backlash procedures onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Dial indicator and accessories, FSN 5210-277-8840
3. Publications listed in references

STANDARDS: Do performance measures IAW referenced publications.  
Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP unit, use PIP references.  
If working in an IHAWK unit, use IHAWK references.

1. Inspect gear assembly (chap 2, TM 9-1425-525-12-4).
2. Prepare for test (para 2-3a, TM 9-1430-528-34-2).
3. Do test steps (para 2-3b and c, TM 9-1430-528-34-2).
4. Have radar operator do antenna positioning test (table 3-10, TM 9-1430-528-12-1).
5. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
6. Take DA Form 2407 to production control.

REFERENCES:

PIP UNITS USE:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-1528-12-1  
TM 9-1430-1528-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750



★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1086

REPLACE FINAL DRIVE ASSEMBLY

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace the final drive assembly in an Improved HAWK Continuous Wave Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. Dial Indicator Kit, 5210-277-8840
2. Tool kit, 4935-724-9093
3. Publications listed in the references

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** **NOTE:** If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Remove bad drive assembly from the radar (para 3-12a, TM 9-1430-528-34-2).
2. Put good drive assembly in the radar (para 3-12b, TM 9-1430-528-34-2).
3. Check your work by observing operator doing test (table 3-10, TM 9-1430-528-12-1 or table 3-12 in PIP TM).
4. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
5. Take DA Form 2407 to production control.

**REFERENCES:** PIP UNITS USE:

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-1528-12-1  
TM 9-1430-1528-34-2  
TM 38-750

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

093-424-1087

# REPAIR LOWER BRUSH ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to fix the lower brush assembly of an Improved HAWK continuous wave radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check lower brush assembly (table 3-1, TM 9-1430-528-12-1).
2. Take out bad lower brush assembly (para 3-14a, TM 9-1430-528-34-2).
3. Put good part on lower brush assembly support (para 3-14b(1) and (2), TM 9-1430-528-34-2).
4. Install contact brushes (para 3-14b(3), TM 9-1430-528-34-2).
5. Check out repair (tables 3-0.1 thru 3-0.3, TM 9-1430-528-12-1).
6. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
7. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK ONLY

093-432-1307

REPAIR WAVEGUIDE ROTARY COUPLER

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix the waveguide rotary coupler of an Improved HAWK Continuous Wave Radar. Do this task onsite or in a maintenance shop area. Use a general mechanics tool kit and publications listed in the references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:**
1. Remove rotary coupler (para 3-14a, TM 9-1430-1528-34-2).
  2. Replace all defective parts.
  3. Assemble rotary coupler (para 3-14b, TM 9-1430-1528-34-2).
  4. Tell operator to make daily checks to validate repair (table 3-12, TM 9-1430-1528-12-1).
  5. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
  6. Take DA Form 2407 to production control.

PIP UNITS USE:

**REFERENCES:** FM 9-59  
TM 9-1430-1528-12-1  
TM 9-1430-1528-34-2  
TM 38-750

C1, FM 9-24L1/2

093-424-1091

PURGE COOLANT SYSTEM

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to purge a coolant system on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check the improved high-powered illuminator radar (table 3-1, TM 9-1430-533-12-1).
2. Drain old fluid from system (para 4-8b, TM 9-1430-533-12-1).
3. Clean out coolant system (para 4-10, TM 9-1430-533-12-1).
4. Fill system with new fluid (para 4-8, TM 9-1430-533-12-1).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

REFERENCES: FM 9-59  
TM 9-1430-533-12-1  
TM 38-750

093-424-1093

REPLACE AZIMUTH DRIVE GEAR

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace a bad azimuth drive gear. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

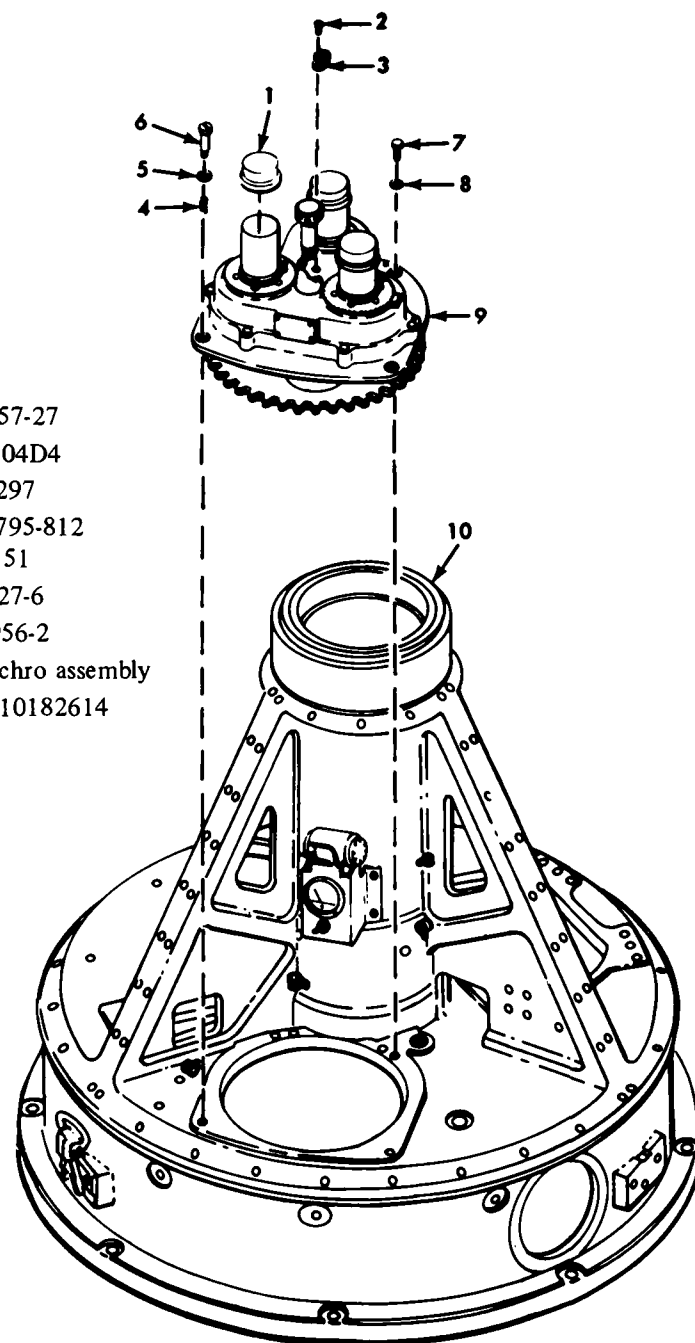
PERFORMANCE  
MEASURES:

1. Check drive gear (table 3-1, TM 9-1430-533-12-1).
2. Take off bad drive gear (para 3-8a, TM 9-1430-533-34-2).
3. Put on good drive gear (para 3-8b, TM 9-1430-533-34-2).
4. Test new drive gear (table 3-0.4, step 1, TM 9-1430-533-12-1).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

(See figure on page 2-226)

093-424-1093 (continued)

- 1 - Cap 9054196
- 2 - Screw MS51957-27
- 3 - Clamp MS21104D4
- 4 - Spring 10068297
- 5 - Washer MS15795-812
- 6 - Screw 10068151
- 7 - Screw MS90727-6
- 8 - Washer 9053956-2
- 9 - Drive and synchro assembly
- 10 - Pedestal base 10182614



*Removal of azimuth synchro drive.*

REFERENCES:

FM 9-59  
 TM 9-1430-533-12-1  
 TM 9-1430-533-34-2  
 TM 38-750

093-424-1094

# REPAIR COUNTER BALANCE ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to fix a counter balance assembly on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check counter balance assembly (chap 2, TM 9-1425-525-12-4).
2. Remove assembly (para 3-3a, TM 9-1430-533-34-2).
3. Take apart assembly (para 3-3b, TM 9-1430-533-34-2).
4. Fix assembly and put it back together (para 3-3c, TM 9-1430-533-34-2).
5. Install repaired assembly (para 3-3d, TM 9-1430-533-34-2).
6. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
7. Take the DA Form 2407 to production control.

**REFERENCES:**

- FM 9-59
- TM 9-1425-525-12-4
- TM 9-1430-533-34-2
- TM 38-750



REPLACE COUNTER BALANCE ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad counter balance assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check counter balance assembly (chap 2, TM 9-1425-525-12-4).
  2. Take out bad part (para 3-3a, TM 9-1430-533-34-2).
  3. Put in good part (para 3-3d, TM 9-1430-533-34-2).
  4. Test new part (table 3-0.4, TM 9-1430-533-12-1).
  5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-533-12-1  
TM 9-1430-533-34-2  
TM 38-750

093-424-1096

# REPLACE LIQUID COOLER UNIT

## CONDITIONS:

Your section chief has told you to replace the liquid cooler unit on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Special tools listed in table 1-1,  
TM 9-1430-533-34-2
3. TM's listed in the references

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Check liquid cooler unit (table 3-2, TM 9-1430-533-12-1).
2. Take out bad liquid cooler unit (para 3-18, TM 9-1430-533-34-2).
3. Put in good liquid cooler unit (para 3-19d, TM 9-1430-533-34-2).
4. Check your work by performing daily check (table 3-0.2, TM 9-1430-533-12-1).
5. Tell your section chief that the checks have been done.

## REFERENCES:

FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-34-2

093-424-1097

REPLACE ELEVATION STOW LOCK

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace the elevation stow lock on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check radar (table 3-1, TM 9-1430-533-12-1).
2. Take out bad part (para 3-4a, TM 9-1430-533-34-2).
3. Put good part in the radar (para 3-4b, TM 9-1430-533-34-2).
4. Check your work by energizing the radar, setting the elevation stow lock to LOCK, and rotating the elevation handwheel. If the antenna does not move, the stow lock is good.
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-34-2  
TM 38-750

093-424-1098

# REPLACE ELEVATION MOTOR TACHOMETER GENERATOR

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to replace the elevation motor tachometer generator on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Grease, FSN 9150-985-7246
3. TM's listed in the references

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Check elevation motor tachometer generator (chap 2, TM 9-1425-525-12-4).
2. Take out bad part (para 3-2a, TM 9-1430-533-34-2).
3. Put in new part (para 3-2c, TM 9-1430-533-34-2).
4. Check your work by doing test (tables 3-5 and 3-6, TM 9-1430-533-34-2).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-533-34-2  
TM 38-750

093-424-1099

REPLACE ELEVATION SYNCHRO

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace the elevation synchro on an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. 200M Ballentine VTVM
  3. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check radar (table 3-1, TM 9-1430-533-12-1).
  2. Take bad synchro out of the radar (para 3-5a, TM 9-1430-533-34-1).
  3. Put good synchro in the radar (para 3-5b, TM 9-1430-533-34-2).
  4. Check your work by doing test (para 3-5c, TM 9-1430-533-34-2).
  5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-34-2  
TM 38-750

093-424-1100

## REPAIR ROTARY PUMP

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to repair the rotary pump of an Improved HAWK high-powered illuminator radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

## STANDARDS:

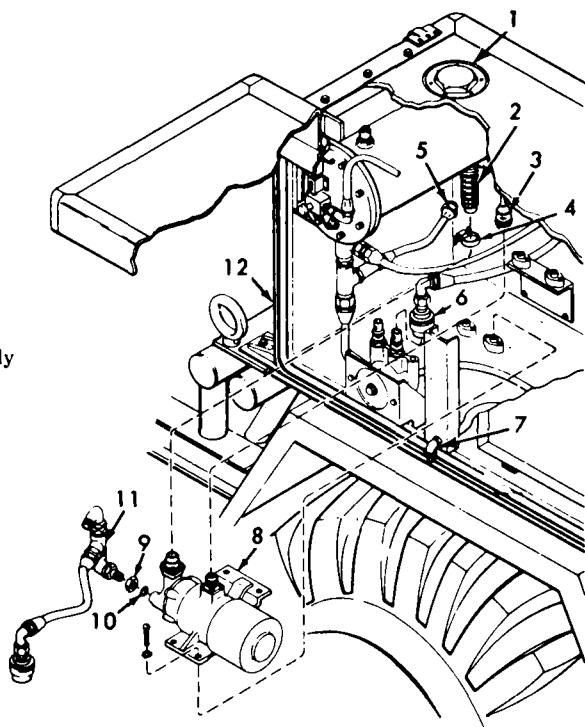
All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Check rotary pump (chap 2, TM 9-1425-525-12-4).
2. Take apart pump (para 3-21b, TM 9-1430-533-34-2).
3. Fix the pump (fig 3-22, TM 9-1430-533-34-2).
4. Put pump back together (para 3-21c, TM 9-1430-533-34-2).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

- 1—Filler cap
- 2—Preformed hose
- 3—Electrical connector
- 4—Hose clamp
- 5—Hose assembly
- 6—Quick-disconnect fitting
- 7—Draincock
- 8—Rotary pump
- 9—Nut
- 10—Preformed packing
- 11—Hose and fitting assembly
- 12—Liquid cooler

Rotary pump.



## REFERENCES:

- FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1430-533-12-1  
 TM 9-1430-533-34-2  
 TM 38-750

093-424-1106

REPLACE FINAL DRIVE ASSEMBLY

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad final drive assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check radar (table 3-1, TM 9-1430-529-12-1).
2. Take off bad part (para 3-23a, TM 9-1430-529-34-2).
3. Put on good part (para 3-23b, TM 9-1430-529-34-2).
4. Adjust gear backlash (para 2-6, TM 9-1430-529-34-2).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES: FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

093-424-1107

# PERFORM SECTOR AND SPUR GEAR BACKLASH CHECK

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to do a sector and spur gear backlash check. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Dial Indicator, FSN 5120-277-8840
3. 100-foot tape measure
4. 3-inch-wide board
5. TM's listed in the references

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check improved range only radar (table 3-1, TM 9-1430-529-12-1).
2. Do sector and spur gear backlash check (para 2-7b, TM 9-1430-529-34-2).
3. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
4. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750



093-424-1108

PERFORM ELEVATION BACKLASH CHECK PROCEDURES

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to do the elevation backlash check procedures on an Improved HAWK range only radar. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanical tool kit
2. Dial Indicator, FSN 5210-277-8840
3. 100-foot tape measure
4. 3-inch-wide board
5. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check improved range only radar (table 3-1, TM 9-1430-529-12-1).
2. Do check procedures (para 2-7a(1) thru (8), TM 9-1430-529-34-2).
3. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
4. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

093-424-1109

# REPLACE AZIMUTH DATA ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad azimuth data assembly in an Improved HAWK range only radar. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

**STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check improved range only radar (table 3-1, TM 9-1430-529-12-1).
2. Take out bad part (para 3-21a, TM 9-1430-529-34-2).
3. Put in good part (para 3-21d and e, TM 9-1430-529-34-2).
4. Check gear backlash (para 3-21e, TM 9-1430-529-34-2).
5. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
6. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1430-529-12-1  
 TM 9-1430-529-34-2  
 TM 38-750

093-424-1110

REPLACE CABLE AND RING ASSEMBLY

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to replace a bad cable and ring assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and TM's listed in the references.

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check radar (table 3-1, TM 9-1430-529-12-1).
2. Do replacement procedures (para 3-26a, TM 9-1430-529-34-2).
3. Test repair (para 3-26b, TM 9-1430-529-34-2).
4. Fill in blocks 20 and 25, DA Form 2407 (para 3-7, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

093-424-1111

REPLACE ROTATING HEAD SYNCHROS

- CONDITIONS:** Your section chief has given you a DA Form 2407 and has told you to replace a bad rotating head synchro. You will do this task on-site or in a maintenance shop area. You will need TM's listed in the references and a general mechanics tool kit.
- STANDARDS:** All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Check the radar (table 3-1, TM 9-1430-529-12-1).
  2. Take off the bad part (para 3-13a (1) thru (5), TM 9-1430-529-34-2).
  3. Put on the good part (para 3-13b (1) thru (3), TM 9-1430-529-34-2).
  4. Do the boresighting check (para 3-13c, TM 9-1430-529-34-2).
  5. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  6. Take DA Form 2407 to production control.
- REFERENCES:**
- FM 9-59
  - TM 9-1430-529-12-1
  - TM 9-1430-529-34-2
  - TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1115

REPAIR LIQUID COOLER

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad liquid cooler in the Improved Pulse Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Purging kit, OPN 5952101
3. Publications listed in the references

STANDARDS: Do all performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Drain coolant (para 3-26b, TM 9-1430-534-34-2).
2. Take the cooler apart (fig 28 (group 1250), TM 9-1430-534-24P).
3. Put in good parts (fig 28, TM 9-1430-534-24P).
4. Put the cooler back together (fig 28, TM 9-1430-534-24P).
5. Test the cooler (table 3-13, TM 9-1430-534-12-1 or table 2-10 in PIP TM).
6. Purge the cooler (para 3-26, TM 9-1430-534-34-2).
7. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
8. Take DA Form 2407 to production control.

REFERENCES: PIP UNITS USE:

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-1534-12-1  
TM 9-1430-1534-24P  
TM 9-1430-1534-34-2  
TM 38-750

FM 9-59  
TM 9-1430-534-12-1  
TM 9-1430-534-24P  
TM 9-1430-534-34-2  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1116

# REPLACE STABILIZING SYSTEM

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace a bad stabilizing system in an Improved Pulse Acquisition Radar. Do this task onsite or in a maintenance shop area. Use publications listed in the references and a general mechanics tool kit.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Disassemble stabilizing system (para 3-3a, TM 9-1430-534-34-2).
2. Take out bad part (para 3-3a and b, TM 9-1430-534-34-2).
3. Put in good part (para 3-3c thru f, TM 9-1430-534-34-2).
4. Check your work by doing the checks (tables 3-16, 3-20, and 5-4, TM 9-1430-534-12-1 or tables 3-19, 3-20, and 5-4 in PIP TM).
5. Complete section II, DA Form 2407, (para 3-11, TM 38-750).
6. Take DA Form 2407 to production control.

|                    |                       |                         |
|--------------------|-----------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b> | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59               | FM 9-59                 |
|                    | TM 9-1430-1534-12-1   | TM 9-1430-534-12-1      |
|                    | TM 9-1430-1534-34-2   | TM 9-1430-534-34-2      |
|                    | TM 38-750             | TM 38-750               |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1117

REPAIR LIQUID COOLER PUMP

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad liquid cooler pump in the Improved Pulse Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Pump repair kit, 5959161 and 5240569
3. Publications listed in the references

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Fix the pump (para 3-24a thru e, TM 9-1430-534-34-2).
2. Test the pump (table 3-13, TM 9-1430-534-12-1, or table 3-10 in PIP TM).
3. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
4. Take DA Form 2407 to production control.

**REFERENCES:** PIP UNITS USE:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-1534-12-1  
TM 9-1430-1534-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-534-12-1  
TM 9-1430-534-34-2  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-1118

# REPAIR PRESSURIZATION UNIT

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad pressurization unit. Do this task in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Publications listed in the references

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Check the pressurization unit (chap 2, TM 9-1425-525-12-4).
2. Setup to do the test (para 15-4, (C)TM 9-1430-534-34-1).
3. Do the test (table 15-4, (C)TM 9-1430-534-34-1).
4. Troubleshoot pressurization unit (fig 15.1 thru 15.3, (C)TM 9-1430-534-34-1).
5. Fix the unit (chap 2, TM 9-1425-525-12-4).
6. Test unit to validate repair (table 15-4, (C)TM 9-1430-534-34-1).
7. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
8. Take DA Form 2407 to production control.

|                    |                        |                         |
|--------------------|------------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b>  | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59                | FM 9-59                 |
|                    | TM 9-1425-525-12-4     | TM 9-1425-525-12-4      |
|                    | (C)TM 9-1430-1534-34-1 | (C)TM 9-1430-534-34-1   |
|                    | TM 38-750              | TM 38-750               |



093-424-1125

REPAIR LAUNCHER TEST SET

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the launcher test set. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 4-1, TM 9-4935-542-34.
3. TM's listed in the references.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher test set (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 4-1, TM 9-4935-542-34).
3. Do the test steps (table 4-2, TM 9-4935-542-34).
4. Troubleshoot the launcher test set (chap 4, TM 9-4935-542-34).
5. Fix the launcher test set (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 4-2, TM 9-4935-542-34).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-4935-542-34  
TM 38-750

093-424-1126

## REPAIR SYNCHRO TEST SET TF 8-106 OR 106A

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the Synchro Test Set TF 8-106 or 106A. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK 105/G or A-30.
2. Test equipment and accessories listed in table 4-28, TM 9-4935-540-14-1 .
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the Synchro Test Set TF 8-106 or 106A (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 4-16a, TM 9-4935-540-14-1).
3. Do the test steps (table 4-29, TM 9-4935-540-14-1).
4. Troubleshoot the Synchro Test Set TF 8-106 or 106A (para 4-16, TM 9-4935-540-14-1).
5. Fix the Synchro Test Set TF 8-106 or 106A (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 4-29, TM 9-4935-540-14-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-4935-540-14-1  
TM 9-4935-540-14-2  
TM 38-750

093-424-1130.

PERFORM PERIODIC MAINTENANCE ON TORQUE WRENCHES

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to do the periodic maintenance checks on a torque wrench. You will do this on-site or in a maintenance shop area. You will need the TM's listed in the references and an Electrical Equipment Tool Kit TK 105/G or A-30.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the torque wrench (chap 2, TM 9-1425-525-12-4).
  2. Setup to do the test (para 3-7a and b, TM 9-4935-541-14).
  3. Do the following test steps:
    - a. Torque Wrench, OPN 9176703 (table 3-2, TM 9-4935-541-14).
    - b. Torque Wrench, FSN 5120-640-6364 (table 3-3, TM 9-4935-541-14).
  4. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  5. Take DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1425-525-12-4  
TM 9-4935-541-14  
TM 38-750

093-424-1131

PERFORM PREVENTIVE MAINTENANCE (PM) ON TOOLS  
AND GENERAL APPLICATION EQUIPMENT

CONDITIONS: Your section chief has told you to do PM on the tools and general application equipment in the support maintenance test equipment electro-mechanical shop. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Lint free clean cloths
2. Light oil
3. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Inspect and do PM on bench equipment (table 3-1, TM 9-4935-541-14).  
2. Repair bench equipment as needed (TM 9-4935-541-14).  
3. Tell your section chief when task has been completed.

REFERENCES: FM 9-59  
TM 9-4935-541-14

093-424-1133

PERFORM PREVENTIVE MAINTENANCE (PM) ON THE NITROGEN PURGING KIT

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to do PM on the nitrogen purging kit. You will do this task on-site or in a maintenance shop area. You will need the following:
1. TM 9-4935-540-14-1
  2. TM 9-4935-541-34P
  3. TM 38-750
  4. General mechanics tool kit
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the nitrogen purging kit (chap 2, TM 9-1425-525-12-4).
  2. Take the pressure gage out of the purging kit (fig. 2, TM 9-4935-541-34P).
  3. Fill out DA Form 2407 for the pressure gage (chap 3, TM 38-750).
  4. Take or send gage to general support for testing.
  5. Put pressure gage back into the purging kit (fig. 2, TM 9-4935-541-34P).
  6. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  7. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-4935-540-14-1  
TM 9-4935-541-34P  
TM 38-750

093-424-1134

PERFORM PERIODIC MAINTENANCE ON IMPROVED HAWK PULSE RADAR (IPR)  
MODULATOR LOAD

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to do the periodic maintenance check on the IPR modulator load. You will do this task on-site or in a maintenance shop area. You will need the TM's listed in the references and an Electrical Equipment Tool Kit TK-105/G or A-30.

STANDARDS: All performance measures will be done in IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES
1. Inspect the modulator load (chap 2, TM 9-1425-525-12-4).
  2. Do the periodic maintenance checks (table 3-7, TM 9-4935-541-14).
  3. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  4. Take DA Form 2407 to production control.

REFERENCES:

- FM 9-59
- TM 9-1425-525-12-4
- TM 9-4935-541-14
- TM 38-750

093-424-1140

REPAIR ALINEMENT TELESCOPE AND FIRE CUTOUT ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to fix a bad alinement telescope and fire cutout assembly. You will do this task on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. Electro-Mechanical Tool Kit A03
  3. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the alinement telescope assembly (para 2-1a, TM 9-1440-531-34-1).
  2. Setup to do the test (para 2-1b, TM 9-1440-531-34-1).
  3. Do the test (table 2-2, TM 9-1440-531-34-1).
  4. Troubleshoot the assembly (fig. 2-2 thru 2-4, TM 9-1440-531-34-1).
  5. Replace the bad part (fig 2-2 thru 2-4, TM 9-1440-531-34-1).
  6. Test the assembly (do performance measure 3 over).
  7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  8. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1440-531-34-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-1141

## REPAIR ELEVATION CONTROL AMPLIFIER

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the elevation control amplifier. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 7-1, TM 9-1440-531-34-1.
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the elevation control amplifier (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 7-1, TM 9-1440-531-34-1).
3. Do the test steps (table 7-2, TM 9-1440-531-34-1).
4. Troubleshoot the elevation control amplifier (chap 7, TM 9-1440-531-34-1).
5. Fix the elevation control amplifier (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 7-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750



093-424-1142

REPAIR ELEVATION SERVO GEAR TRAIN

- CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to fix a bad elevation servo gear train. You will do this task on-site or in a maintenance shop area. You will need the TM's listed in the references and a general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the gear train (para 8-1a, TM 9-1440-531-34-1).
  2. Setup for the test (para 8-1b thru k, TM 9-1440-531-34-1).
  3. Do the test (table 8-2, TM 9-1440-531-34-1).
  4. Troubleshoot the servo gear train (fig. 8-2 thru 8-6, TM 9-1440-531-34-1).
  5. Fix the gear train (chap 2, TM 9-1425-525-12-4).
  6. Retest the gear train (table 8-2, TM 9-1440-531-34-1).
  7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
  8. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1143

## REPAIR AZIMUTH OR ELEVATION SERVO AMPLIFIER

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the azimuth or elevation servo amplifier. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 4-1, TM 9-1440-531-34-1.
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the azimuth or elevation servo amplifier (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 4-1b, TM 9-1440-531-34-1).
3. Do the test steps (table 4-2, TM 9-1440-531-34-1).
4. Troubleshoot the azimuth or elevation servo amplifier (chap 4, TM 9-1440-531-34-1).
5. Fix the azimuth or elevation servo amplifier (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 4-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1144

REPAIR CONTROL AMPLIFIER POWER SUPPLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the control amplifier power supply. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 6-1, TM 9-1440-531-34-1 .
3. TM's listed in the references.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the control amplifier power supply (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 6-1, TM 9-1440-531-34-1).
3. Do the test steps (table 6-2, TM 9-1440-531-34-1).
4. Troubleshoot the control amplifier power supply (chap 6, TM 9-1440-531-34-1).
5. Fix the control amplifier power supply (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 6-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1145

## REPAIR LAUNCHER PROGRAMMER

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the launcher programmer. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 9-1, TM 9-1440-531-34-1 .
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher programmer (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 9-1, TM 9-1440-531-34-1).
3. Do the test steps (table 9-2, TM 9-1440-531-34-1).
4. Troubleshoot the launcher programmer (chap 9, TM 9-1440-531-34-1).
5. Fix the launcher programmer (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 9-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1146

REPAIR LOGIC CHASSIS

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the logic chassis. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 10-1 TM 9-1440-531-34-1 .
3. TM's listed in the references.

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the logic chassis (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 10-1, TM 9-1440-531-34-1).
3. Do the test steps (table 10-2, TM 9-1440-531-34-1).
4. Troubleshoot the logic chassis (chap 10, TM 9-1440-531-34-1).
5. Fix the logic chassis (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 10-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1147

# REPAIR AZIMUTH CONTROL AMPLIFIER

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the azimuth control amplifier. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 3-1, TM 9-1440-531-34-1.
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Inspect the azimuth control amplifier (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (para 3-1, TM 9-1440-531-34-1).
3. Do the test steps (table 3-2, TM 9-1440-531-34-1).
4. Troubleshoot the azimuth control amplifier (chap 3, TM 9-1440-531-34-1).
5. Fix the azimuth control amplifier (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 3-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1148

REPAIR AZIMUTH SERVO GEAR TRAIN

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the azimuth servo gear train. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanical Tool Kit A03
3. TM's listed in the references

STANDARDS:

You will do all performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the azimuth servo gear train (chap 2, TM 9-1425-525-12-4).
2. Set up for the test (tables 5-1b thru n, TM 9-1440-531-34-1).
3. Do the test procedure (table 5-2, TM 9-1440-531-34-1).
4. Troubleshoot the azimuth servo gear train (chap 5, TM 9-1440-531-34-1).
5. Fix the azimuth servo gear train (fig. 5-7, TM 9-1440-531-34-1).
6. Check your work by doing the checks (table 5-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750

093-424-1149

## REPAIR 28-VOLT DC POWER SUPPLY

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the 28-volt DC power supply. You will do this task on-site or in a maintenance shop area at the high frequency console. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A-30.
2. Test equipment and accessories listed in table 11-1, TM 9-1440-531-34-1.
3. TM's listed in the references.

## STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the 28-volt DC power supply (chap 2, TM 9-1425-525-12-4).
2. Do the preparation for test steps (tables 11-1b and e, TM 9-1440-531-34-1).
3. Do the test steps (table 11-2, TM 9-1440-531-34-1).
4. Troubleshoot the 28-volt DC power supply (chap 11, TM 9-1440-531-34-1).
5. Fix the 28-volt DC power supply (chap 2, TM 9-1425-525-12-4).
6. Check your work by doing the test steps (table 11-2, TM 9-1440-531-34-1).
7. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
8. Take DA Form 2407 and chassis to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-1  
TM 38-750



093-424-1150

REPAIR LAUNCHER SECTION CONTROL BOX

CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the launcher control box. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Multimeter PSM-6
2. Electrical Equipment Tool Kit TK-105/G
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher section control box (chap 2, TM 9-1425-525-12-4).
2. Do ohms checks on relays K1 through K3 (fig. 3-22, TM 9-1440-531-12-3).
3. Do circuit card checks on A1 through A12 by substitution (fig. 3-22, TM 9-1440-531-12-3).
4. Fix the launcher section control box (chap 2, TM 9-1440-531-12-3).
5. Check your work by doing the test steps (table 3-17, TM 9-1440-531-12-1).
6. Fill in blocks 20 and 25 of DA Form 2407 (para 3-7, TM 38-750).
7. Give DA Form 2407 to your section chief.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-3  
TM 38-750

093-424-1161

TRANSPORT SUPPORT MAINTENANCE TEST EQUIPMENT (SMTE)  
SHOP 8 BY PRIME MOVER

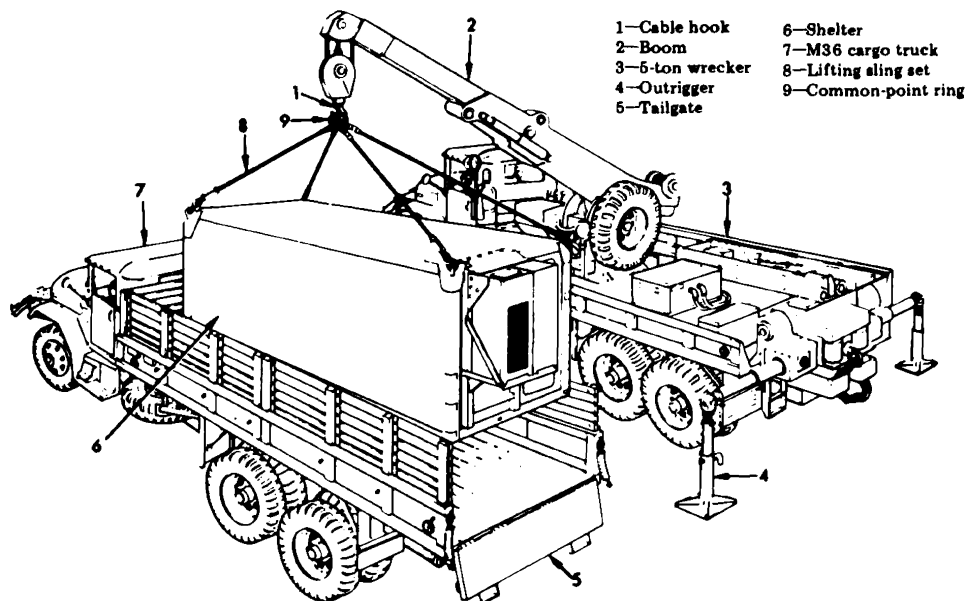
CONDITIONS: Your section chief has told you to move the SMTE shop 8 by truck. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Stake puller kit
3. Sledge hammer
4. TM listed in the references

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the SMTE shop 8 for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the SMTE shop 8 ready to move (para 1.1-2).  
2. Setup the SMTE shop 8 (para 1.1-5).



*Emplacement of shelter by 5-ton wrecker.*

REFERENCES: FM 9-59  
TM 9-4935-541-14

093-424-1162

PREPARE SUPPORT MAINTENANCE TEST EQUIPMENT (SMTE) SHOP 8  
FOR TRANSPORT BY HELICOPTER

- CONDITIONS: Your section chief has told you to get the SMTE Shop 8 ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. Stake puller kit
  3. Sledge hammer
  4. TM listed in the references
- STANDARDS: Standards for this task will be met when you do the following:
1. Prepare the SMTE Shop 8 for movement.
  2. Set it up at the new location.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Get the SMTE Shop 8 ready to move (para 1.1-2a(1) thru (8)).
  2. Get the SMTE Shop 8 ready for air lift (para 1.1-3).
  3. Setup the SMTE Shop 8 (para 1.1-6).
- REFERENCES:
- FM 9-59  
TM 9-4935-541-14

093-424-1163

TRANSPORT SUPPORT MAINTENANCE TEST EQUIPMENT (SMTE) SHOP 5  
BY PRIME MOVER

CONDITIONS: Your section chief has told you to move the SMTE Shop 5 by truck. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool set
2. Stake puller kit
3. TM listed in the references

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the SMTE Shop 5 for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the SMTE Shop 5 ready to move (para 5-15).  
2. Set up the SMTE Shop 5 (para 5-19).

REFERENCES: FM 9-59  
TM 9-4935-543-14

093-424-1164

PREPARE SUPPORT MAINTENANCE TEST EQUIPMENT (SMTE) SHOP 5  
FOR TRANSPORT BY HELICOPTER

CONDITIONS: Your section chief has told you to get the SMTE Shop 5 ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Helicopter sling set
3. Stake puller kit
4. Sledge hammer
5. TM listed in the references

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the SMTE Shop 5 for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the SMTE Shop 5 ready to move (para 5-15).  
2. Set up the SMTE Shop 5 (para 5-20)

REFERENCES: FM 9-59  
TM 9-4935-543-14

093-424-1165

TRANSPORT GUIDED MISSILE LAUNCHER BY PRIME MOVER

CONDITIONS: Your section chief has told you to move the guided missile launcher by truck. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Stake puller kit
3. Sledge hammer
4. TM listed in the references

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the guided missile launcher for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the guided missile launcher ready to move (para 4-23).  
2. Set up the guided missile launcher (para 4-23).

REFERENCES: FM 9-59  
TM 9-1425-525-12-1

093-424-1166

TRANSPORT FLOAT LOADER TRANSPORTER BY PRIME MOVER

CONDITIONS: Your section chief has told you to move the float loader transporter. You will do this task on-site or in a maintenance shop area. You will need the TM listed in the references.

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the float loader transporter for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Get the float loader transporter ready to move (para 25a thru e).
2. Set up the float loader transporter (para 25d).

REFERENCES: FM 9-59  
TM 9-1450-500-10

093-424-1167

TRANSPORT MISSILE PALLET BY PRIME MOVER

CONDITIONS:

Your section chief has told you to move the missile pallet by truck. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Two 3/4-inch open end wrenches
2. One 7/16-inch open wrench
3. TM 9-1425-525-12-1

STANDARDS:

Standards for this task will be met when you do the following:

1. Prepare the missile pallet for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Get the missile pallet ready to move (para 3-38).
2. Load the missile pallet (para 24).
3. Set up the missile pallet (para 4-36).

REFERENCES:

FM 9-59  
TM 9-1425-525-12-1  
TM 9-1450-500-10



093-424-1168

PREPARE MISSILE PALLET FOR TRANSPORT BY HELICOPTER

- CONDITIONS: Your section chief has told you to get the missile pallet ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the following:
1. Helicopter lifting kit
  2. Two 3/4-inch open-end wrenches
  3. One 7/16-inch open-end wrench
  4. Stake puller
  5. Sledge hammer
  6. TM listed in the references
- STANDARDS: Standards for this task will be met when you do the following:
1. Prepare the missile pallet for movement.
  2. Set it up at the new location.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Get the missile pallet ready to move (para 3-39).
  2. Set up the missile pallet (para 4-37).
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-1

093-424-1169

PREPARE GUIDED MISSILE LAUNCHER FOR TRANSPORT BY HELICOPTER

- CONDITIONS: Your section chief has told you to get the guided missile launcher ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. 3/4-inch open-end wrench
  3. Stake puller kit
  4. Sledge hammer
  5. TM's listed in the references
- STANDARDS: Standards for this task will be met when you do the following:
1. Prepare the guided missile launcher for movement.
  2. Set it up at the new location.
  3. Follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Get the guided missile launcher ready to move (para 3-26, TM 9-1425-525-12-1).
  2. Set up the guided missile launcher (para 4-24, TM 9-1425-525-12-1).
  3. Do check procedures (tables 3-15 thru 3-17, TM 9-1440-531-12-1).
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-1  
TM 9-1440-531-12-1

093-424-1170

PREPARE LOADER TRANSPORTER FOR TRANSPORT BY HELICOPTER

CONDITIONS: Your section chief has told you to get the loader transporter ready to move by helicopter. You will do this task on-site or in a maintenance shop area. You will need the TM listed in the references and a helicopter lifting kit.

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the loader transporter for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: 1. Get the loader transporter ready to move (para 25e).  
2. Set up the loader transporter (para 25e).

REFERENCES: FM 9-59  
TM 9-1450-500-10

093-424-1171

TRANSPORT IMPROVED HAWK LAUNCHER SECTION CONTROL BOX (ILSCB)  
BY A PRIME MOVER

CONDITIONS: Your section chief has told you to move the ILSCB by truck. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Stake puller kit
2. Sledge hammer
3. TM listed in the references

STANDARDS: Standards for this task will be met when you do the following:

1. Prepare the ILSCB for movement.
2. Set it up at the new location.
3. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES: 1. Get the ILSCB ready to move (para 3-35).  
2. Set up the ILSCB (para 4-33).

REFERENCES: FM 9-59  
TM 9-1425-525-12-1

FM 9-24L1/2

NOTES

Chapter 2      **COMMON TASKS**  
**SECTION II**



TASKS FOR SKILL LEVEL 2

PART 1  
TASKS FOR ALL SOLDIERS

(No new tasks at this level.)

## PART 2

## TASKS FOR ALL IMPROVED HAWK REPAIRERS

| TASK NUMBER  |                                                                                                         | PAGE  |
|--------------|---------------------------------------------------------------------------------------------------------|-------|
|              | PREPARING FORMS AND RECORDS                                                                             |       |
| 093-420-2101 | Prepare DD Form 314, Preventive Maintenance Schedule and Record.....                                    | 2-276 |
| -2102        | Prepare DA Form 2028, Recommendation for Changes to Publications and Blank Forms (Technical Manuals)... | 2-777 |
| -2103        | Prepare DA Form 2408-5, Equipment Modification Record.....                                              | 2-278 |
| -2104        | Prepare DA Form 2405, Maintenance Request Register.                                                     | 2-279 |
| -2105        | Prepare DA Form 2028, Recommendation for Changes to Publications and Blank Forms (Supply Manuals).....  | 2-280 |
| -2106        | Prepare DA Form 2062, Temporary Hand Receipt.....                                                       | 2-281 |



093-420-2101

PREPARE DD FORM 314, PREVENTIVE MAINTENANCE SCHEDULE AND RECORD

CONDITIONS: Your unit has an item that needs a DD Form 314 on it. Your section chief has told you to fill out the form for the item. This task will be done in a maintenance shop area.

STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

PERFORMANCE MEASURES:

1. Fill in the serial number (para 3-3c(4)(a)).
2. Fill in the unit number (para 3-3c(4)(b)).
3. Print in name of item (para 3-3c(4)(c)).
4. Post model number (para 3-3c(4)(d)).
5. Print in unit owning item (para 3-3c(4)(e)).
6. Print in service data (para 3-3c(4)(f)).
7. Post date item received, who received from and who has it (para 3-3c(4)(g)).
8. Enter type of services required and symbols (para 3-3c(3), (5) and (7)).
9. Give completed form to your section chief.

REFERENCES: TM 38-750

093-420-2102

PREPARE DA FORM 2028, RECOMMENDATION FOR CHANGES TO PUBLICATIONS AND  
BLANK FORMS (TECHNICAL MANUALS)

**CONDITIONS:** You will be using technical manuals to repair items in your unit. You may find errors in these manuals. If so, you must fill out a DA Form 2028 to make corrections in the manuals. This task will be done in a maintenance shop area. AR 310-1 must be used to fill out this form.

**STANDARDS:** Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

**PERFORMANCE  
MEASURES:**

1. Fill in the "TO" block (para 1-27).
2. Fill in "FROM" block (para 1-27).
3. Fill in "DATE" block (para 1-27).
4. Print manual numbers in "PUBLICATION" block (para 1-27).
5. Print date of manual in "DATE" block (para 1-27).
6. Print title of manual in "TITLE" block (para 1-27).
7. Print location of area to be changed, page number, paragraph line number, figure number (para 1-27).
8. Print the recommended change and reason for the change in the right column (para 1-27).
9. Print name, grade and telephone number (para 1-27).
10. Sign name in signature block (para 1-27).
11. Give form to your section chief.

**REFERENCES:** AR 310-1

093-420-2103

PREPARE DA FORM 2408-5, EQUIPMENT MODIFICATION RECORD

CONDITIONS: Your section chief has told you to prepare a DA Form 2408-5 to show the completion of a modification work order (MWO). This task will be done in a maintenance shop area.

STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

PERFORMANCE MEASURES:

1. Print name, type, model and series in block 1 (para 4-8c(1)).
2. Print registration number in block 2 (para 4-8c(2)).
3. Print serial number in block 3 (para 4-8c(3)).
4. Print MWO number in block 4 (para 4-8c(4)(a)).
5. Print date of MWO in block 4 (para 4-8c(4)(b)).
6. Print code in block 4, column c (para 4-8c(4)(c)).
7. Print code for type of maintenance in block 4, column d (para 4-8c(4)(d)).
8. Print MWO title in block 4, column e (para 4-8c(4)(e)).
9. Use a pencil to enter date MWO is to be finished in block 5, column c (para 4-8c(4)(f)).

NOTE: When MWO is completed, performance measures 10 thru 13 will be done.

10. Erase date in block 5 and enter date MWO is completed in ink (4-8c(5)(a)).
11. Enter manhours used to do the MWO in block 5, column g (para 4-8c(5)(b)).
12. Print name of unit doing the MWO in block 5, column h (para 4-8c(5)(c)).
13. Print name and rank of person doing the MWO in block 5, column i (para 4-8c(5)(d)).
14. Give completed form to section chief when task is completed.

REFERENCES: TM 38-750

093-420-2104

PREPARE DA FORM 2405, MAINTENANCE REQUEST REGISTER

**CONDITIONS:** You have been told by your section chief to prepare a DA Form 2405 on items coming to your shop for repair. The DA Form 2407 for the item will give you the information that you need to prepare the DA Form 2405. This task will be done in a maintenance shop area.

**STANDARDS:** Standards for this task will be met when all blocks are filled in correctly and all entries can be read.

**PERFORMANCE MEASURES:**

1. Print job order number in column a (para 3-5c(1)).
2. Print amount and name of item in column b (para 3-5c(2)).
3. Print unit that has requested the repair in column c (para 3-5c(3)).
4. Print data from DA Form 2407 in column d (para 3-5c(4)).
5. Print brief description of work in column e (para 3-5c(5)).
6. Print date work order received in column f (para 3-5c(6)).
7. Print date repair was started in column g (para 3-5c(7)).
8. Print date repair was done in column h (para 3-5c(8)).
9. Print total manhours used to do the repair in column i (para 3-5c(9)).
10. Dispose of form IAW (para 3-5d).

**REFERENCES:** TM 38-750

093-420-2105

PREPARE DA FORM 2028, RECOMMENDATION FOR CHANGES TO PUBLICATIONS AND  
BLANK FORMS (SUPPLY MANUALS)

- CONDITIONS: You have found errors in a supply manual that must be corrected. To correct the errors, you must send in a DA Form 2028. This task will be done in a maintenance shop area using AR 310-1.
- STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Fill in the "TO" block.
  2. Fill in the "FROM" block.
  3. Fill the "DATE" block.
  4. Print manual number in "PUBLICATION" block.
  5. Print date of manual in "DATE" block.
  6. Print title of manual in "TITLE" block.
  7. Print location of area to be changed by page number, column number, and line number.
  8. Print total number of items supported by your unit.
  9. Put a check mark in appropriate column.
  10. Print the sample as shown in the manual in "FROM" column under action recommended.
  11. Print the example as it should be after the change in the "TO" column under action recommended.
  12. Print any general comments in Part III.
  13. Print name, grade or title, telephone number and sign.
  14. Give the form to your section chief.
- REFERENCES: AR 310-1

093-420-2106

PREPARE DA FORM 2062, TEMPORARY HAND RECEIPT

- CONDITIONS: You have been told by your section chief to prepare a DA Form 2062. This form will be used when a unit wants to borrow an item that is on your property book. This task will be done in a maintenance shop area. AR 710-2 and equipment TM will be used to fill out this form. No help will be given while doing this task.
- STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Line out the ANNEX NO in the title (para 2-9a(1), AR 710-2).
  2. Print the unit in the FROM block (para 2-9a(3), AR 710-2).
  3. Print the UIC and hand receipt file number of the unit in the TO block (para 2-9a(3), AR 710-2).
  4. Enter the NSN of the item in the STOCK NO column (para 2-9a(3), AR 710-2).
  5. Print the data in the ITEM DESCRIPTION column (para 2-9a(3), AR 710-2).
  6. Enter the total allowance authorized the hand receipt holder in T column (para 2-9a(3), AR 710-2).
  7. Enter the total amount possessed by the unit in the BALANCE column (para 2-9a(3), AR 710-2).
- REFERENCES: AR 710-2

FM 9-24L1/2

NOTES

2-282

## PART 3

TASKS FOR ALL IMPROVED HAWK  
LAUNCHER AND MECHANICAL SYSTEMS REPAIRERS

| TASK NUMBER  |                                                                                                                                                                | PAGE  |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|              | PREPARING FORMS AND RECORDS                                                                                                                                    |       |
| 093-424-2001 | Prepare DA Form 2408-10, Equipment Component Register.....                                                                                                     | 2-285 |
| -2002        | Prepare DA Form 2408-14, Uncorrected Fault Record..                                                                                                            | 2-286 |
|              | PERFORMING INTRASYSTEM MAINTENANCE                                                                                                                             |       |
| -2005        | Repair Improved High-Powered Illuminator Radar/<br>Improved Launcher Section Control Box (IHIPIR/ILSCB)<br>Improved Launcher Integrated System Malfunction.... | 2-287 |
| -2006        | Perform Improved HAWK System Alinement Procedures..                                                                                                            | 2-289 |
|              | PERFORMING IMPROVED HAWK LAUNCHER MAINTENANCE                                                                                                                  |       |
| -2010        | Perform Forward Breakaway Check Procedures.....                                                                                                                | 2-290 |
| -2011        | Perform Quarterly Maintenance on Launcher.....                                                                                                                 | 2-291 |
| -2012        | Perform Launcher Boresight.....                                                                                                                                | 2-292 |
| -2013        | Repair Sector Release Mechanism Assembly.....                                                                                                                  | 2-294 |
| -2014        | Repair Sector Assembly.....                                                                                                                                    | 2-295 |
| -2015        | Replace Azimuth Drive and Data Assembly Component..                                                                                                            | 2-296 |
| -2016        | Repair Forward Support Assembly.....                                                                                                                           | 2-297 |
| -2017        | Repair Launcher Control Unit (LCU).....                                                                                                                        | 2-299 |
| -2018        | Repair Azimuth Drive and Data Assembly.....                                                                                                                    | 2-300 |
| -2019        | Replace Actuator Control Assembly.....                                                                                                                         | 2-301 |
| -2020        | Repair Rear Support Assembly.....                                                                                                                              | 2-302 |
| -2021        | Repair Elevation Data Mechanism (EDM).....                                                                                                                     | 2-303 |
| -2022        | Repair Alinement Telescope and Fire Cutout<br>Assembly.....                                                                                                    | 2-304 |
| -2023        | Repair Energizing and Power Circuits.....                                                                                                                      | 2-305 |
| -2024        | Repair Synchro Circuits.....                                                                                                                                   | 2-306 |
| -2025        | Repair Positioning Circuits.....                                                                                                                               | 2-307 |
| -2026        | Repair Shoot-Around Circuits.....                                                                                                                              | 2-308 |
| -2027        | Repair Firing and Control Circuits.....                                                                                                                        | 2-309 |
| -2032        | Replace Launcher Boom.....                                                                                                                                     | 2-310 |
| -2033        | Replace Rear Support Assembly.....                                                                                                                             | 2-311 |
| -2034        | Repair Hatch Actuating Cylinder.....                                                                                                                           | 2-312 |



## TASK NUMBER

## PAGE

PERFORMING IMPROVED HAWK LOADER TRANSPORTER  
SUPERSTRUCTURE ELECTROMECHANICAL MAINTENANCE

|              |                                             |       |
|--------------|---------------------------------------------|-------|
| 093-424-2040 | Perform Hoisting Beam Latch Adjustment..... | 2-313 |
| -2041        | Repair Hoisting Beam.....                   | 2-314 |
| -2042        | Repair Distribution Box.....                | 2-315 |
| -2043        | Replace Wiring Harness and Cabling.....     | 2-316 |

PERFORMING IMPROVED HAWK CONTINUOUS WAVE  
ACQUISITION RADAR (ICWAR) ELECTROMECHANICAL  
MAINTENANCE

|        |                                    |       |
|--------|------------------------------------|-------|
| ★-2050 | Replace Gear Assembly.....         | 2-317 |
| ★-2051 | Repair Azimuth Drive Assembly..... | 2-318 |
| ★-2052 | Replace Torque Tube Assembly.....  | 2-319 |
| ★-2053 | Replace Antenna Pedestal.....      | 2-320 |
| ★-2054 | Repair Antenna Pedestal.....       | 2-321 |

PERFORMING IMPROVED HAWK HIGH-POWERED ILLUMINATOR  
RADAR (IHIPIR) ELECTROMECHANICAL MAINTENANCE

|       |                                                    |       |
|-------|----------------------------------------------------|-------|
| -2060 | Repair Azimuth Synchro Drive.....                  | 2-322 |
| -2061 | Adjust Elevation Drive Clutch.....                 | 2-323 |
| -2062 | Perform Boresight Procedures.....                  | 2-324 |
| -2063 | Repair Cooling System Interlock.....               | 2-325 |
| -2064 | Repair Azimuth Drive Box and Housing Assembly..... | 2-326 |

PERFORMING IMPROVED HAWK RANGE ONLY RADAR (IROR)  
ELECTROMECHANICAL MAINTENANCE

|       |                                                                    |       |
|-------|--------------------------------------------------------------------|-------|
| -2070 | Perform Boresight Procedures.....                                  | 2-327 |
| -2071 | Repair Rotating Head Assembly.....                                 | 2-328 |
| -2072 | Repair Head and Tube Assembly.....                                 | 2-330 |
| -2073 | Repair Upper Head Contact Ring and Holder Assembly.....            | 2-331 |
| -2074 | Perform Replacement and Alinement of Rotating Head<br>Synchro..... | 2-332 |

PERFORMING IMPROVED HAWK PULSE ACQUISITION RADAR  
(IPAR) ELECTROMECHANICAL MAINTENANCE

|        |                                                     |       |
|--------|-----------------------------------------------------|-------|
| ★-2080 | Repair Stabilization System.....                    | 2-333 |
| ★-2081 | Repair Gear Case Assembly.....                      | 2-334 |
| ★-2082 | Repair Turntable.....                               | 2-335 |
| ★-2083 | Replace QK-629 Stabilization Cavity Drive Belt..... | 2-336 |
| ★-2084 | Repair Shouldered Shaft Assembly.....               | 2-337 |
| ★-2085 | Repair Pallet Pedestal Support.....                 | 2-338 |
| ★-2086 | Replace Pallet Pedestal Support Mount.....          | 2-339 |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2050

REPLACE GEAR ASSEMBLY

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace a bad gear assembly in an Improved HAWK Continuous Wave Acquisition Radar. Do this task onsite or in a maintenance shop area. Use a general mechanics tool kit, an electromechanical tool kit A03, and publications listed in references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Take out torque tube (para 3-16a, TM 9-1430-528-34-2).
2. Take torque tube apart (fig 3-23, TM 9-1430-528-34-2).
3. Remove bad gears.
4. Put on good gears.
5. Put torque tube together (fig 3-23 and para 3-16c, TM 9-1430-528-34-2).
6. Put torque tube in the radar (para 3-16d, TM 9-1430-528-34-2).
7. Have operator test torque tube (table 3-10, TM 9-1430-528-12-1 or table 3-12 in PIP TM).
8. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
9. Take DA Form 2407 to production control.

| REFERENCES: | PIP UNITS USE:      | IHAWK UNITS USE:   |
|-------------|---------------------|--------------------|
|             | FM 9-59             | FM 9-59            |
|             | TM 9-1430-1528-12-1 | TM 9-1430-528-12-1 |
|             | TM 9-1430-1528-34-2 | TM 9-1430-528-34-2 |
|             | TM 38-750           | TM 38-750          |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2051

REPAIR AZIMUTH DRIVE ASSEMBLY

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to fix the azimuth drive assembly in the Improved Continuous Wave Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Dial indicator kit, NSN 5210-00-277-8840
3. Publications listed in the references

STANDARDS: Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Take out bad assembly (para 3-11a, TM 9-1430-528-34-2).
2. Take bad assembly apart (para 3-11b, TM 9-1430-528-34-2).
3. Replace defective parts (fig 3-18, TM 9-1430-528-34-2).
4. Assemble repaired assembly (para 3-11c, TM 9-1430-528-34-2).
5. Install repaired assembly (para 3-11d, TM 9-1430-528-34-2).
6. Have operator check repair (table 3-10, TM 9-1430-528-12-1 or table 3-12 in PIP TM).
7. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
8. Take DA Form 2407 to production control.

|             |                     |                    |
|-------------|---------------------|--------------------|
| REFERENCES: | PIP UNITS USE:      | IHAWK UNITS USE:   |
|             | FM 9-59             | FM 9-59            |
|             | TM 9-1430-1528-12-1 | TM 9-1430-528-12-1 |
|             | TM 9-1430-1528-34-2 | TM 9-1430-528-34-2 |
|             | TM 38-750           | TM 38-750          |

093-424-2001

PREPARE DA FORM 2408-10, EQUIPMENT COMPONENT REGISTER

- CONDITIONS: Your section chief has told you to fill out a DA Form 2408-10, Equipment Component Register for the replacement of a part on a loader transporter. You may do this task on-site or in a maintenance support area.
- STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Print the name and model number of the part in block 1 (para 4-10c (b), TM 38-750).
  2. Print the serial number in block 2 (para 4-10c (b)2, TM 38-750).
  3. Leave TAB blank (para 4-10c (b) 3, TM 38-750).
  4. Print the name of the part in nomenclature block (para 4-10c (b) 4, TM 38-750).
  5. Print hour meter reading in usage block (para 4-10c (b) 5, TM 38-750).
  6. Put the DA Form 2408-10 in the log book (para 7d(1), TM 38-750).
- REFERENCES: TM 38-750

093-424-2002

PREPARE DA FORM 2408-14, UNCORRECTED FAULT RECORD

- CONDITIONS: You are told to fill out a DA Form 2408-14 Uncorrected Fault Record, on an Improved HAWK Loader Transporter. This task may be done on-site or in a maintenance shop area.
- STANDARDS: Standards for this task will be met when all blocks are filled in correctly and all entries can be read.
- PERFORMANCE MEASURES:
1. Print name of the item in block 1 (para 4-13c (2), TM 38-750).
  2. Print model number of the item in block 2 (para 4-13c (3), TM 38-750).
  3. Print serial number of the item in block 3 (para 4-13c (4), TM 38-750).
  4. Print status symbol of major item in column a (para 4-13c (5), TM 38-750).
  5. Print uncorrected fault in column b (para 4-13c (6), TM 38-750).
  6. Print reason for delay in column c (para 4-13c (7), TM 38-750).
  7. Signature approval will be put in column e (para 4-13c (9), TM 38-750).
  8. Keep DA Form 2408-14 for 6 months after last entry is made in column f, and then destroy (para 4-13c, d, TM 38-750).
- REFERENCE: TM 38-750

093-424-2005

REPAIR IMPROVED HIGH-POWERED ILLUMINATOR RADAR/IMPROVED LAUNCHER  
SECTION CONTROL BOX (IHIPIR/ILSCB) IMPROVED LAUNCHER INTEGRATED SYSTEM  
MALFUNCTION

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to fix the IHIPIR/ILSCB/Improved Launcher integrated system trouble. You will have help from an IHIPIR repairer (MOS 24K). You will do this task on-site. You will need the following:

1. Electromechanical Tool Kit A03
2. Oscilloscope AN/USM-281C
3. Multimeter AN/PSM-6
4. Multimeter, Electronic TS-505
5. Ohmmeter ZM-21A/U
6. TM's listed in the references

**STANDARDS:** All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE  
MEASURES:**

1. Inspect the Improved HAWK Launcher and the ILSCB (table 3-1, TM 9-1440-531-12-1).
2. Watch battery personnel do the integrated system check (table 3-17, TM 9-1440-531-12-1).
3. Find the integrated system trouble.

**NOTE:** If the trouble is in the data cable, replace the cable and go to performance measure number 8. If it is not a bad data cable, continue with performance measure number 4.

4. Do checks on major end items (tables 3-11 thru 3-15, TM 9-1440-531-12-1).
5. Troubleshoot the bad item (TM 9-1440-531-12-1, TM 9-1440-531-12-2 and TM 9-1440-531-12-3).
6. Fix the bad item (chap 2, TM 9-1425-525-12-4).
7. Check your work (tables 3-11 thru 3-15, TM 9-1440-531-12-1).
8. Watch battery personnel do the integrated system check (table 3-17, TM 9-1440-531-12-1).
9. Fill out DA Form 2407 (para 3-12, TM 38-750).
10. Take DA Form 2407 to production control.

FM 9-24L1/2

093-424-2005 (continued)

REFERENCES:

FM 9-59  
TM 9-1400-500-12-4  
TM 9-1425-525-12-4  
TM 9-1430-533-12-1  
(C) TM 9-1430-533-12-2-1  
(C) TM 9-1430-533-12-2-2  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2  
TM 9-1440-531-12-3  
TM 38-750

093-424-2006

PERFORM IMPROVED HAWK SYSTEM ALINEMENT PROCEDURES

CONDITIONS: Your unit has received a request for help in doing the system alinement steps. Your section chief has told you to be a member of the maintenance support team. You will do this task on-site. You will need the following:

1. Electromechanical Tool Kit A03
2. Electrical Equipment Tool Kit TK-105/G
3. Oscilloscope AN/USM-281C
4. Voltmeter 300M Ballentine
5. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Inspect the launcher (table 3-1, TM 9-1440-531-12-1).
2. Do the alinement (table 6-1, step 7, TM 9-1425-525-12-1).
3. Check the alinement (table 3-16, TM 9-1440-531-12-1).
4. Fill in section II, DA Form 2407 (para 3-12, TM 38-750).
5. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
 TM 9-1425-525-12-1  
 TM 9-1440-531-12-1  
 TM 38-750



093-424-2010

PERFORM FORWARD BREAKAWAY CHECK PROCEDURES

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to do the breakaway check on an Improved HAWK Launcher. You will do this task on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. Indicator assembly
  3. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Do the breakaway check (para 3-1K, TM 9-1440-531-34-2).
  3. Fill out blocks 20 and 25, DA Form 2407, (para 3-12, TM 38-750).
  4. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59
  - TM 9-1440-531-12-1
  - TM 9-1440-531-34-2
  - TM 38-750

093-424-2011

PERFORM QUARTERLY MAINTENANCE ON LAUNCHER

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to do the quarterly maintenance on an Improved HAWK Launcher. You will do this task in a maintenance shop area. TM 9-1440-531-12-1 will be used to do this task. You will need a general mechanics tool kit and a multimeter TS 505/U.
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the launcher (para 3-4a and b).
  2. Do the quarterly maintenance on the launcher (table 3-4).
  3. Test the launcher (table 3-16).
  4. Fill out DD Form 314 (para 3-3C, TM 38-750).
  5. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 38-750

093-424-2012

PERFORM LAUNCHER BORESIGHT

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to boresight an Improved HAWK Launcher. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Special tools and equipment listed in table 1-1, TM 9-1440-531-34-2
3. Torque table listed in table 3-1, TM 9-1440-531-34-2
4. TM's listed in the references

STANDARDS:

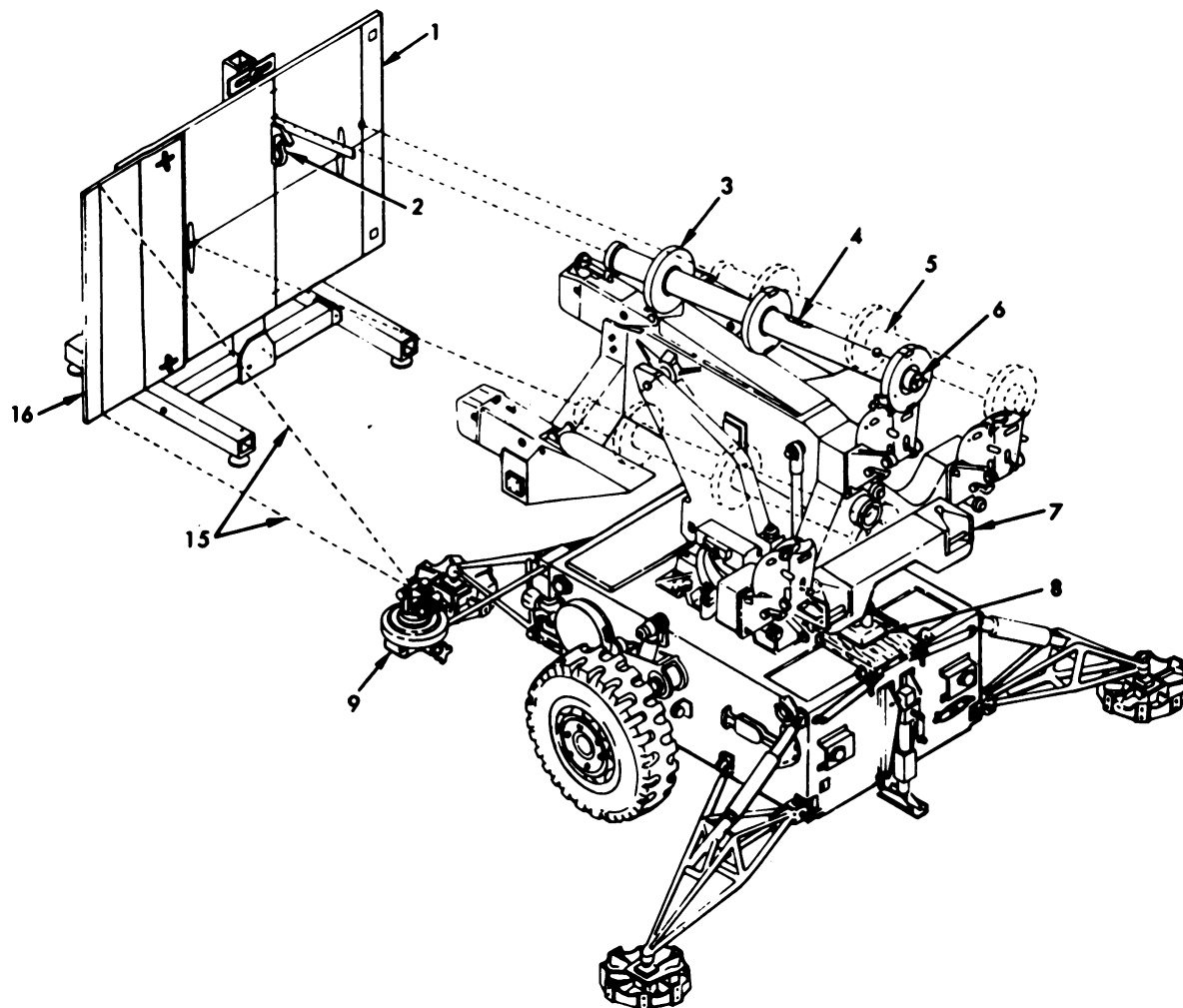
All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the launcher (table 3-1, TM 9-1440-531-12-1).
2. Do the boresight test (para 3-1, TM 9-1440-531-34-2).
3. Fill out blocks 20 and 25, DA Form 2407, (para 3-12, TM 38-750).
4. Take the DA Form 2407 to production control.

(See figure on page 2-293)

093-424-2012 (continued)



- 1-Gridboard assembly
- 2-Combination square
- 3-Indexing fixture
- 4-Level vial
- 5-Knob
- 6-Telescope
- 7-Index fitting
- 8-Jack

- 9-Telescope bar and telescope assembly
- 10-Deleted
- 11-Deleted
- 12-Deleted
- 13-Deleted
- 14-Deleted
- 15-Telescope vertical travel
- 16-Gridboard leaf

*Launcher boresight.*

REFERENCES:

FM 9-59  
 TM 9-1440-531-12-1  
 TM 9-1440-531-34-2  
 TM 38-750

093-424-2013

# REPAIR SECTOR RELEASE MECHANISM ASSEMBLY

## CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix a bad sector release mechanism assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Special tools listed in table 1-1, TM 9-1440-531-34-2
3. TM's listed in the references

## STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Check the sector release (chap 2, TM 1425-525-12-4).
2. Take off the sector assembly (para 4-11.1a, TM 9-1440-531-34-2).
3. Take the sector assembly apart (fig. 17, 18, 19, TM 9-1440-531-24P).
4. Replace the bad part (fig. 17, 18, 19, TM 9-1440-531-24P).
5. Assemble the sector (fig. 17, 18, 19, TM 9-1440-531-24P).
6. Install the sector assembly (fig. 4-10, TM 9-1440-531-34-2).
7. Test the sector assembly (para 3-1, TM 9-1440-531-34-2).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1440-531-24P  
 TM 9-1440-531-34-2  
 TM 38-750

093-424-2014

REPAIR SECTOR ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix a bad sector assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electromechanical Tool Kit A03
2. General mechanics tool kit
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the sector (chap 2, TM 9-1425-525-12-4).
2. Take off the bad sector (para 4-10, fig 4-12 (8), TM 9-1440-531-34-2).
3. Take the bad sector apart (para 4-11b, TM 9-1440-531-34-2).
4. Fix the sector (fig. 4-12, TM 9-1440-531-34-2).
5. Put the sector together (para 4-11c, TM 9-1440-531-34-2).
6. Put the sector on the launcher (para 4-10, fig. 4-12 (8), TM 9-1440-531-34-2).
7. Test the sector (table 2-9, TM 9-1440-531-12-1).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2015

REPLACE AZIMUTH DRIVE AND DATA ASSEMBLY COMPONENT

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace a bad azimuth drive and data assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electromechanical Tool Kit A03
2. General mechanics tool kit
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the azimuth drive (chap 2, TM 9-1425-525-12-4).
2. Take off the bad drive (para 5-45a, TM 9-1440-531-12-1).
3. Take the drive apart (fig. 5-16, TM 9-1440-531-12-1).
4. Put on the good part (fig. 5-16, TM 9-1440-531-12-1).
5. Put the drive together (fig. 5-16, TM 9-1440-531-12-1).
6. Put the drive on the launcher (para 5-45b, TM 9-1440-531-12-1).
7. Test the drive (table 3-17, TM 9-1440-531-12-1).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 38-750

093-424-2016

REPAIR FORWARD SUPPORT ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix a bad forward support assembly. You will do this task on-site or in a maintenance shop area. TM 9-1425-525-12-4 and TM 9-1440-531-34-2 will be used to do this task. You will need the following:

1. Electromechanical Tool Kit A03
2. General mechanics tool kit
3. Special tools listed in table 1-1, TM 9-1440-531-34-2

STANDARDS:

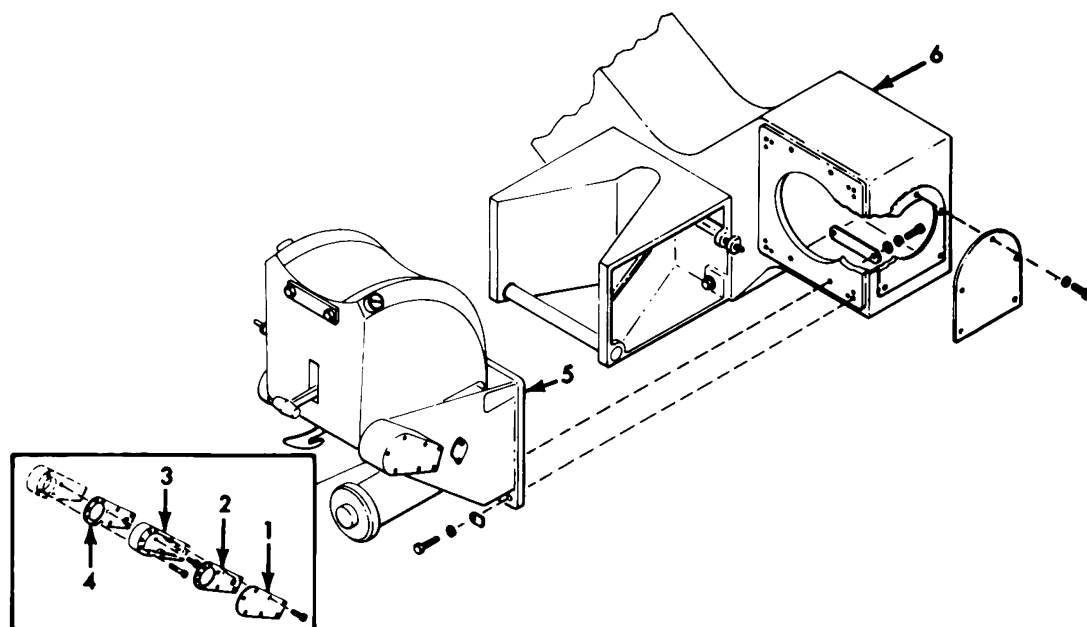
All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the support (chap 2, TM 9-1425-525-12-4).
2. Take off the bad support (para 4-10a, TM 9-1440-531-34-2).
3. Take the support apart (para 4-10b, TM 9-1440-531-34-2).
4. Put on the good part (fig. 4-12 (2), TM 9-1440-531-34-2).
5. Assemble the support (para 4-10c, TM 9-1440-531-34-2).
6. Put the support on the launcher (para 4-10d, TM 9-1440-531-34-2).
7. Test the support (para 3-1, TM 9-1440-531-34-2).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take the DA Form 2407 to production control.

(See figure on page 2-298)





1-Cover plate  
2-Gasket  
3-Elevation downstep switch housing

4-Gasket  
5-Forward support assembly  
6-Outrigger assembly

*Forward support assembly.*

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-34-2  
TM 38-750

093-424-2017

REPAIR LAUNCHER CONTROL UNIT (LCU)

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to fix a bad LCU. You will do this task on-site or in a maintenance shop area. TM 9-1440-531-12-1 and TM 9-1440-531-34-2 will be used to do this task. You will need an electromechanical tool kit A03.

**STANDARDS:** All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check the LCU (table 2-1, TM 9-1440-531-12-1).
2. Take the LCU apart (para 4-20b, TM 9-1440-531-34-2).
3. Put in a good part (table 2-1, TM 9-1440-531-12-1).
4. Assemble the LCU (para 4-20c, TM 9-1440-531-34-2).
5. Test the unit (tables 3-9 thru 3-11, TM 9-1440-531-12-1).
6. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
7. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

REPAIR AZIMUTH DRIVE AND DATA ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix a bad azimuth drive and data assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and the technical manuals listed in the references.
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the azimuth drive (chap 2, TM 9-1425-525-12-4).
  2. Take off the drive (para 4-14a, TM 9-1440-531-34-2).
  3. Take the drive apart (para 4-14b, TM 9-1440-531-34-2).
  4. Take off the bad part (fig. 4-17, TM 9-1440-531-34-2).
  5. Put on a good part (fig. 4-17, TM 9-1440-531-34-2).
  6. Assemble the drive (para 4-14c, TM 9-1440-531-34-2).
  7. Put the good drive on (para 4-14d, TM 9-1440-531-34-2).
  8. Test the drive assembly (table 3-16, TM 9-1440-531-12-1 and para 3-1p, TM 9-1440-531-34-2).
  9. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  10. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2019

REPLACE ACTUATOR CONTROL ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to replace a bad actuator control assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electromechanical Tool Kit A03
2. General mechanics tool kit
3. TM's listed in the references

**STANDARDS:** All performance measures must be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check the actuator control assembly (chap 2, TM 9-1425-525-12-4).
2. Take off the bad part (para 5-53a, TM 9-1440-531-12-1).
3. Put on the good part (para 5-53g, TM 9-1440-531-12-1).
4. Test the actuator control assembly (tables 3-16 and 3-17, TM 9-1440-531-12-1).
5. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
6. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

REPAIR REAR SUPPORT ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix a bad rear support assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and the technical manuals listed in the references.
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the rear support (chap 2, TM 9-1425-525-12-4).
  2. Remove the bad support (para 4-7a, TM 9-1440-531-34-2).
  3. Fix the support (fig. 4-10, TM 9-1440-531-34-2).
  4. Assemble the support (para 4-7a, TM 9-1440-531-34-2).
  5. Install the support (para 4-7b, TM 9-1440-531-34-2).
  6. Test the support (tables 3-16 and 3-17, TM 9-1440-531-34-2).
  7. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  8. Take the DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2021

REPAIR ELEVATION DATA MECHANISM (EDM)

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix a bad EDM. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electromechanical Tool Kit A03
2. General mechanics tool kit
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the EDM (chap 2, TM 9-1425-525-12-4).
2. Remove the bad EDM (para 4-5a, TM 9-1440-531-34-2).
3. Take the EDM apart (para 4-5b, TM 9-1440-531-34-2).
4. Install a good part (fig. 4-5, TM 9-1440-531-34-2).
5. Assemble the EDM (para 4-5c, TM 9-1440-531-34-2).
6. Replace the EDM (para 4-5d, TM 9-1440-531-34-2).
7. Test the EDM (tables 3-15 thru 3-17, TM 9-1440-531-12-1).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

REPAIR ALINEMENT TELESCOPE AND FIRE CUTOUT ASSEMBLY

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix the alinement telescope and fire cutout assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A03
2. Test equipment and accessories listed in table 1-1, TM 9-1440-531-34-2
3. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:
1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1430-531-12-1).
  2. Remove alinement telescope and cutout assembly (fig. 5-23.1a, TM 9-1440-531-12-1).
  3. Disassemble the alinement telescope and cutout assembly (para 4-21b, TM 9-1440-531-34-2).
  4. Remove bad part (fig. 4-23, TM 9-1440-531-34-2).
  5. Put in good part (fig. 4-23, TM 9-1440-531-34-2).
  6. Assemble the alinement telescope and cutout assembly (para 4-21c, TM 9-1440-531-34-2).
  7. Replace alinement telescope and cutout assembly (para 5-23.1, TM 9-1440-531-12-1).
  8. Perform test, (para 3-2, TM 9-1440-531-34-2).
  9. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  10. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2023

# REPAIR ENERGIZING AND POWER CIRCUITS

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to fix the energizing and power circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A30
2. Test equipment and accessories listed in table 3-8, TM 9-1440-531-12-1
3. TM's listed in the references

**STANDARDS:** All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

- PERFORMANCE MEASURES:**
1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
  2. Set up controls before you turn on power (table 3-9 TM 9-1440-531-12-1).
  3. Turn power ON (table 3-12, TM 9-1440-531-12-1).
  4. Do the test steps (table 3-15, TM 9-1440-531-12-1).
  5. Troubleshoot the energizing and power circuits (para 3-9 and 3-10, fig. 9-3, TM 9-1440-531-12-2).
  6. Fix the energizing and power circuits (chap 2, TM 9-1425-525-12-4).
  7. Check your work by doing the test steps (table 3-15, TM 9-1440-531-12-1).
  8. Turn power OFF (table 3-13, TM 9-1440-531-12-1).
  9. Fill out section II, DA Form 2407 (para 3-12, TM 38-750).
  10. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1440-531-12-1  
 TM 9-1440-531-12-2  
 TM 38-750



REPAIR SYNCHRO CIRCUITS

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix the synchro circuits. You will do this task on-site or in a maintenance shop area. You will need the following:
1. Electrical Equipment Tool Kit TK-105/G or A30
  2. Test equipment and accessories listed in table 3-8, TM 9-1440-531-12-1
  3. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
  2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
  3. Turn power ON (table 3-12, TM 9-1440-531-12-1).
  4. Do the test steps (table 3-15, TM 9-1440-531-12-1).
  5. Troubleshoot the synchro circuits (table 8-5, sect II, para 4, TM 9-1440-531-12-2).
  6. Fix the synchro circuits (chap 2, TM 9-1425-525-12-4).
  7. Check your work by doing the test steps (table 3-15, TM 9-1440-531-12-1).
  8. Turn power OFF (table 3-13, TM 9-1440-531-12-1).
  9. Fill out section II, DA Form 2407 (para 3-12, TM 38-750).
  10. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2  
TM 38-750

093-424-2025

# REPAIR POSITIONING CIRCUITS

## CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix the positioning circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A30
2. Test equipment and accessories listed in table 3-8, TM 9-1440-531-12-1
3. TM's listed in the references

## STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
3. Turn power ON (table 3-12, TM 9-1440-531-12-1).
4. Do the test steps (table 3-16, TM 9-1440-531-12-1).
5. Troubleshoot the positioning circuits (table 8-5, TM 9-1440-535-12-1).
6. Fix the positioning circuits (chap 2, TM 9-1425-525-12-4).
7. Check your work by doing the test steps (table 3-16, TM 9-1440-535-12-1).
8. Turn power OFF (table 3-13, TM 9-1440-531-12-1).
9. Fill out section II, DA Form 2407 (para 3-12, TM 38-750).
10. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2  
TM 9-1440-535-12-1  
TM 38-750

093-424-2026

REPAIR SHOOT-AROUND CIRCUITS

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix the shoot-around circuits. You will do this task on-site or in a maintenance shop area. You will need the following:
1. Electrical Equipment Tool Kit TK-105/G or A30
  2. Test equipment and accessories listed in table 3-8, TM 9-1440-531-12-1
  3. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all the safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
  2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
  3. Turn power ON (table 3-12, FM 9-1440-531-12-1).
  4. Do the test steps (table 3-16, FM 9-1440-531-12-1).
  5. Troubleshoot the shoot-around circuits (table 8-5, para 4-14, TM 9-1440-531-12-2).
  6. Fix the shoot-around circuits (chap 2, TM 9-1425-525-12-4).
  7. Check your work by doing the test steps (table 3-16, TM 9-1440-531-12-1).
  8. Turn power OFF (table 3-13, TM 9-1440-531-12-1).
  9. Fill out section II, DA Form 2407 (para 3-12, TM 38-750).
  10. Take DA Form 2407 to production control.
- REFERENCES
- FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2  
TM 38-750

093-424-2027

## REPAIR FIRING AND CONTROL CIRCUITS

## CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix the firing and control circuits. You will do this task on-site or in a maintenance shop area. You will need the following:

1. Electrical Equipment Tool Kit TK-105/G or A30
2. Test equipment and accessories listed in table 3-8, TM 9-1440-531-12-1
3. TM's listed in the references

## STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher (tables 3-1 and 3-2, TM 9-1440-531-12-1).
2. Set up controls before you turn on power (table 3-9, TM 9-1440-531-12-1).
3. Turn power ON (table 3-12, TM 9-1440-531-12-1).
4. Do the test steps (table 3-17, TM 9-1440-531-12-1).
5. Troubleshoot the firing and control circuits (table 8-6, chap 5, TM 9-1440-531-12-2).
6. Fix the firing and control circuits (chap 2, TM 9-1425-525-12-4).
7. Check your work by doing the test steps (table 3-17, TM 9-1440-531-12-1).
8. Turn power OFF (table 3-13, TM 9-1440-531-12-1).
9. Fill out section II, DA Form 2407 (para 3-12, TM 38-750).
10. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1440-531-12-1  
TM 9-1440-531-12-2  
TM 38-750

093-424-2032

REPLACE LAUNCHER BOOM

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace a launcher boom on an Improved HAWK Launcher. You will do this task on-site or in a maintenance shop area using TM 9-1440-531-12-1 and TM 9-1440-531-34-2. You will need the following:
1. General mechanics tool kit
  2. Special tools listed in table 3-1, TM 9-1440-531-34-2
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take off the bad boom (para 4-2a, TM 9-1440-531-34-2).
  3. Put on the new boom (para 4-2b, TM 9-1440-531-34-2).
  4. Do the boresight steps (para 3-1, TM 9-1440-531-34-2).
  5. Check your work by doing the test steps (table 3-16, TM 9-1440-531-12-1).
  6. Fill in blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  7. Take DA Form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2033

REPLACE REAR SUPPORT ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace the rear support assembly of an Improved HAWK Launcher. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanical Tool Kit A03
3. Special tools listed in table 1-1, TM 9-1440-531-34-2
4. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the launcher (table 3-1, TM 9-1440-531-12-1).
2. Take off the old assembly (para 4-7a, TM 9-1440-531-34-2).
3. Put on new assembly (para 4-7b, TM 9-1440-531-34-2).
4. Adjust and aline rear support assemblies (para 3-1 and 3-2, TM 9-1440-531-34-2).
5. Check your work by doing the test steps (table 3-16, TM 9-1440-531-12-1).
6. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
7. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

REPAIR HATCH ACTUATING CYLINDER

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix the hatch actuating cylinder of an Improved HAWK Launcher. You will do this task on-site or in a maintenance shop area using TM 9-1440-531-12-1 and TM 9-1440-531-34-2. You will need a general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the launcher (table 3-1, TM 9-1440-531-12-1).
  2. Take out the bad cylinder (para 4-18a, TM 9-1440-531-34-2).
  3. Take apart the bad cylinder (fig. 4-20, TM 9-1440-531-34-2).
  4. Fix the bad cylinder (fig. 4-20, TM 9-1440-531-34-2).
  5. Put the fixed component back together (para 4-18c, TM 9-1440-531-34-2).
  6. Install fixed component (para 4-18d, TM 9-1440-531-34-2).
  7. Check your work by doing the test steps (para 5-3, TM 9-1440-531-12-1).
  8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  9. Take DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1440-531-12-1  
TM 9-1440-531-34-2  
TM 38-750

093-424-2040

PERFORM HOISTING BEAM LATCH ADJUSTMENT

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to check the adjustment of the hoisting beam latches. You will do the task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanical Tool Kit A03
3. Special tools listed in para 5-11.1, TM 9-1450-500-34
4. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the loader (table 3-2, TM 9-1450-500-10).
2. Do the adjustment (para 5-11.1, TM 9-1450-500-34).
3. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
4. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-20  
TM 9-1450-500-34  
TM 38-750



093-424-2041

REPAIR HOISTING BEAM

CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix a bad hoisting beam. This task may be done on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Electromechanical Tool kit A03
3. Special Tool, Extractor FSN 5120-251-1525
4. Special Tool, Extractor FSN 5120-816-5706
5. Special materials listed in tables 5-2 and 5-3, TM 9-1450-500-34
6. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Check the beam (table 3-2, TM 9-1450-500-34).
2. Remove the bad beam (para 5-5b, TM 9-1450-500-34).
3. Take the beam apart (para 5-11a, TM 9-1450-500-34).
4. Fix the beam (para 5-4c and 5-11b, TM 9-1450-500-34).
5. Put the beam on the loader (para 5-5d, TM 9-1450-500-34).
6. Test the beam (sec IV, TM 9-1450-500-34).
7. Fill out blocks 20 and 25, DA Form 2407 (para 3-13, TM 38-750).
8. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1450-500-10  
TM 9-1450-500-20  
TM 9-1450-500-34  
TM 38-750

093-424-2042

# REPAIR DISTRIBUTION BOX

## CONDITIONS:

Your section chief has given you a DA Form 2407 and has told you to fix the distribution box. You will do this task on-site or in a maintenance shop area using TM 9-1450-500-20. You will need the following:

1. General mechanics tool kit
2. Electromechanical Tool Kit A-03

## STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

## PERFORMANCE MEASURES:

1. Inspect the loader transporter (table 2-2).
2. Remove bad distribution box (para 2-58a).
3. Troubleshoot the distribution box (table 2-3).
4. Fix the distribution box (fig. 2-47).
5. Install repaired distribution box (para 2-58a (2)).
6. Check repair (table 2-2).
7. Complete blocks 20 and 25 DA Form 2407 (para 3-12, TM 38-750).
8. Take DA Form 2407 to production control.

## REFERENCES:

FM 9-59  
TM 9-1450-500-20  
TM 38-750

093-424-2043

REPLACE WIRING HARNESS AND CABLING

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to replace bad wiring harness and cabling on an Improved HAWK Loader Transporter. This task will be done on-site or in a maintenance shop area. TM 9-1450-500-20 will be used to do this task. You will need a general mechanics tool kit.
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the loader (table 2-2).
  2. Take off the bad harness (fig. 2-49 and 2-49a).
  3. Put on the good wiring harness (fig. 2-48.1 and 2-49).
  4. Test the new harness (table 2-2).
  5. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  6. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1450-500-20  
TM 38-750

093-424-2050

REPLACE GEAR ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to replace a bad gear assembly in an Improved HAWK Continuous Wave Acquisition Radar. You will do this task on-site or in a maintenance shop area. TM 9-1430-528-34-2 and TM 9-1430-528-12-1 will be used to do this task. You will need a general mechanics tool kit and an electromechanical tool kit A03.

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the radar (table 3-1, TM 9-1430-528-12-1).
2. Take out the torque tube (para 3-16a, TM 9-1430-528-34-2).
3. Take the torque tube apart (fig. 3-23, TM 9-1430-528-34-2).
4. Take off bad gears, numbers 8 and 9 (fig. 2-23, TM 9-1430-528-34-2).
5. Put on good gears, numbers 8 and 9 (fig 2-23, TM 9-1430-528-34-2).
6. Put the torque tube together (para 3-16a, TM 9-1430-528-34-2).
7. Put the torque tube in the radar (para 3-16d, TM 9-1430-528-34-2).
8. Test the torque tube (table 3-10, TM 9-1430-528-12-1).
9. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
10. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

093-424-2051

REPAIR AZIMUTH DRIVE ASSEMBLY

CONDITIONS: Your section chief has given you a DA Form 2407 and has told you to fix the azimuth drive assembly. This task will be done on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Dial Indicator Kit NSN 5210-00-277-8840
3. TM's listed in the references

STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES:

1. Inspect the Improved Continuous Wave Acquisition Radar (tables 3-1 and 3-2, TM 9-1430-528-34-2).
2. Take out bad assembly (para 3-11a, TM 9-1430-528-34-2).
3. Take bad assembly apart (para 3-11b, TM 9-1430-528-34-2).
4. Replace defective parts (fig. 3-18, TM 9-1430-528-34-2).
5. Assemble repaired assembly (para 3-11c, TM 9-1430-528-34-2).
6. Install repaired assembly (para 3-11d, TM 9-1430-528-34-2).
7. Check repair (table 3-10, TM 9-1430-528-12-1).
8. Complete blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2052

REPLACE TORQUE TUBE ASSEMBLY

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to replace a torque tube on an Improved HAWK Continuous Wave Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. Electromechanical tool kit A03
3. Special tools, OPN 10105070
4. Dial indicator kit
5. Publications listed in the references

STANDARDS: Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Take off bad torque tube (para 3-16a, TM 9-1430-528-34-2).
2. Take bad torque tube apart (para 3-16b, TM 9-1430-528-34-2).
3. Assemble good tube (para 3-16c, TM 9-1430-528-34-2).
4. Install new tube in radar (para 3-16d, TM 9-1430-528-34-2).
5. Have operator test torque tube (tables 3-9 thru 3-14, TM 9-1430-528-12-1 or tables 3-10 thru 3-16 in PIP TM).
6. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
7. Take DA Form 2407 to production control.

C1, FM 9-24L1/2

REFERENCES: PIP UNITS USE:

FM 9-59  
TM 9-1430-1528-12-1  
TM 9-1450-1528-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

C1, FM 9-24L1/2



C1, FM 9-24L1/2

\* THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2053

#### REPLACE ANTENNA PEDESTAL

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace a bad antenna pedestal on an Improved HAWK Continuous Wave Acquisition Radar. Do this task onsite or in a maintenance shop area. Use the following:

1. General mechanics tool kit
2. M-60 wrecker or overhead hoist
3. Torque wrench (foot-pounds)
4. Publications listed in the references

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP unit, use PIP references. If working in an IHAWK unit, use IHAWK references.

1. Remove bad pedestal (para 3-9a, TM 9-1430-528-34-2).
2. Put on good pedestal (para 3-9b, TM 9-1430-528-34-2).
3. Have operator test new pedestal (tables 3-9 thru 3-15, TM 9-1430-528-12-1 or tables 3-10 thru 3-16, TM 9-1430-1528-12-1).
4. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
5. Take DA Form 2407 to production control.

| REFERENCES: | PIP UNITS USE:      | IHAWK UNITS USE:   |
|-------------|---------------------|--------------------|
|             | FM 9-59             | FM 9-59            |
|             | TM 9-1430-1528-12-1 | TM 9-1430-528-12-1 |
|             | TM 9-1430-1528-34-2 | TM 9-1430-528-34-2 |
|             | TM 38-750           | TM 38-750          |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2054

REPAIR ANTENNA PEDESTAL

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix the antenna pedestal in the Improved Continuous Wave Acquisition Radar. Do this task onsite in a maintenance shop area. Use a general mechanics tool kit, a torque wrench (foot-pounds) and publications listed in the references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP unit, use PIP references.  
If working in an IHAWK unit, use IHAWK references.

1. Remove bad part (para 3-15a, TM 9-1430-528-34-2).
2. Tear down bad part (para 3-15b, TM 9-1430-528-34-2).
3. Replace bad part (fig 3-22, TM 9-1430-528-34-2).
4. Assemble repaired part (para 3-15c, TM 9-1430-528-34-2).
5. Install repaired part on radar (para 3-15d, TM 9-1430-528-34-2).
6. Test assembly to check repair (tables 3-9 thru 3-15, TM 9-1430-528-12-1 or tables 3-10 thru 3-16 in PIP TM).
7. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
8. Take DA Form 2407 to production control.

**REFERENCES:** PIP UNITS USE:

FM 9-59  
TM 9-1430-1528-12-1  
TM 9-1430-1528-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-528-12-1  
TM 9-1430-528-34-2  
TM 38-750

093-424-2060

REPAIR AZIMUTH SYNCHRO DRIVE

- CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to fix the azimuth synchro drive. This task will be done on-site or in a maintenance shop area. You will need a general mechanics tool kit, Ballentine voltmeter and the TM's listed in the references.
- STANDARDS:** All performance measures will be done IAW reference manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:**
1. Inspect the Improved High-Powered Illuminator Radar (tables 3-1 and 3-2, TM 9-1430-533-12-1).
  2. Take out the bad synchro drive (para 3-10a, TM 9-1430-533-34-2).
  3. Take the synchro drive apart (para 3-10b, TM 9-1430-533-34-2).
  4. Replace the worn part (fig 3-10, TM 9-1430-533-34-2).
  5. Assemble the synchro drive with new part (para 3-10c, TM 9-1430-533-34-2).
  6. Install repaired synchro drive (para 3-10d, TM 9-1430-533-34-2).
  7. Aline azimuth synchro drive (para 3-10e, TM 9-1430-533-34-2).
  8. Test to check repair (tables 3-0.1 thru 3-0.3, TM 9-1430-533-12-1).
  9. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  10. Take DA Form 2407 to production control.
- REFERENCES:**
- FM 9-59
  - TM 9-1430-533-12-1
  - TM 9-1430-533-24P
  - TM 9-1430-533-34-2
  - TM 38-750

093-424-2061

ADJUST ELEVATION DRIVE CLUTCH

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to set the elevation drive clutch on an Improved High-Powered Illuminator Radar (IHIPR). You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Torque wrench, 0 to 100 inch-pounds
3. TM's listed in the references

**STANDARDS:** All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. De-energize IHIPR and disconnect power cable (para 2-3, TM 9-1430-533-34-2).
2. Do the adjustments (para 2-3a thru f, TM 9-1430-533-34-2).
3. Connect the power cable.
4. Perform energizing and power supply daily checks (table 3-0.2, TM 9-1430-533-12-1).
5. Check antenna movement (step 1, table 3-0.4, TM 9-1430-533-12-1).
6. De-energize IHIPR (table 3-7, TM 9-1430-533-12-1).
7. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
8. Take DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-34-2  
TM 38-750

FM 9-24L1/2

093-424-2062

#### PERFORM BORESIGHT PROCEDURES

##### CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to perform the boresight procedures on an Improved HAWK High-Powered Illuminator Radar. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Special tools listed in table 2-2, TM 9-1430-533-34-2
3. Oscilloscope AN/USM-281C or AN/USM-50C
4. TM's listed in the references

##### STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

##### PERFORMANCE MEASURES:

1. Set up to do the boresight check (para 2-5b and c, TM 9-1430-533-34-2).
2. Put the boresight equipment together and set it up (para 2-5d, TM 9-1430-533-34-2).
3. Do the boresight check (para 2-5e, TM 9-1430-533-34-2).
4. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
5. Take the DA Form 2407 to production control.

##### REFERENCES:

FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-24P  
TM 9-1430-533-34-2  
TM 38-750

093-424-2063

REPAIR COOLING SYSTEM INTERLOCK

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix the cooling system interlock. This task will be done in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Sealing Compound Mil-S40083
3. TM's listed in the references

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the cooling system interlock (fig. 3-18, TM 9-1430-533-34-2).
2. Tear down and repair the bad component (fig. 3-18, TM 9-1430-533-34-2).
3. Install repaired parts (para 3-16c, TM 9-1430-533-34-2).
4. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
5. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-24P  
TM 9-1430-533-34-2  
TM 38-750

REPAIR AZIMUTH DRIVE BOX AND HOUSING ASSEMBLY

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to fix the azimuth drive box and the housing assembly. This task will be done on-site or in a maintenance shop area. You will need the following:
1. General mechanics tool kit
  2. Electromechanical Tool Kit A03
  3. Torque wrench (inch-pounds)
  4. TM's listed in the references
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Inspect the Improved High-Powered Illuminator Radar (tables 3-1 and 3-2, TM 9-1430-533-12-1).
  2. Remove the bad assembly (para 3-7a, TM 9-1430-533-34-2).
  3. Tear down the bad assembly (fig. 3-7, TM 9-1430-533-34-2).
  4. Install good parts (fig. 3-7, TM 9-1430-533-34-2).
  5. Assemble the repaired item (para 3-7c, TM 9-1430-533-34-2).
  6. Install the repaired assembly (fig. 3-7, TM 9-1430-533-34-2).
  7. Do test steps to check repair (table 3-0.2, TM 9-1430-533-12-1).
  8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  9. Take DA form 2407 to production control.
- REFERENCES:
- FM 9-59  
TM 9-1430-533-12-1  
TM 9-1430-533-24P  
TM 9-1430-533-34-2  
TM 38-750

093-424-2070

PERFORM BORESIGHT PROCEDURES

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to do the boresight check on an Improved HAWK Range Only Radar. You will do this task on-site or in a maintenance shop area. TM 9-1430-529-12-1 and TM 9-1430-529-34-2 will be used to do this task. You will need the following:

1. General mechanics tool kit
2. Special tools listed in table 2-1, TM 9-1430-529-34-2
3. Oscilloscope AN/USM-281C

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Check the radar (table 3-0.1, TM 9-1430-529-12-1).
2. Set up to do the boresight check (para 2-3b, c and d, TM 9-1430-529-34-2).
3. Do the boresight check (para 2-3e, TM 9-1430-529-34-2).
4. Check the alinement (table 3-16, TM 9-1430-529-12-1).
5. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
6. Take the DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750



093-424-2071

REPAIR ROTATING HEAD ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix the rotating head assembly. You will do this task on-site or in a maintenance shop area. You will need the following:

1. General mechanics tool kit
2. Special tools and equipment listed in table 1-1, TM 9-1430-529-34-2
3. TM's listed in the references

STANDARDS:

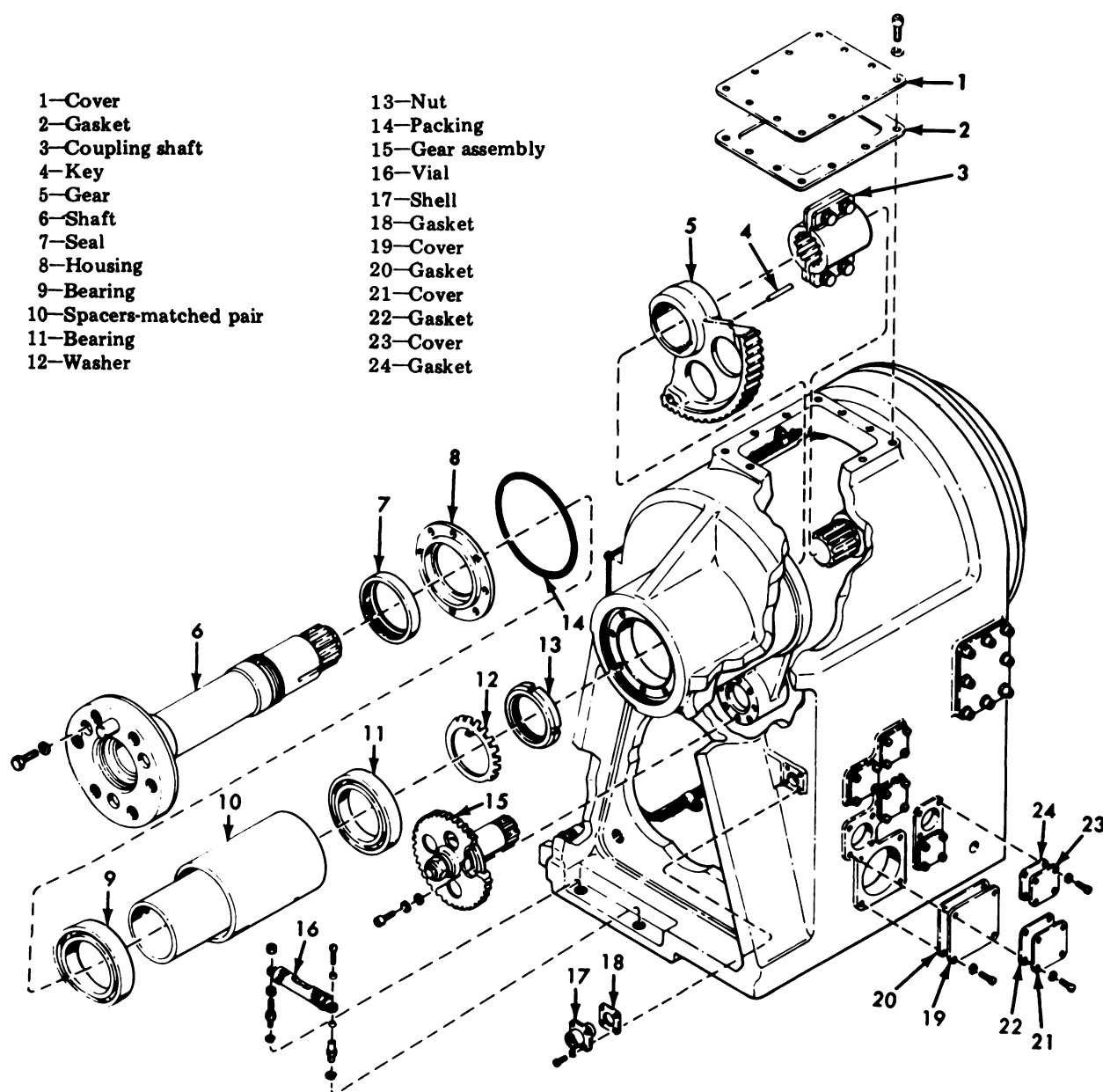
All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect the head assembly (chap 2, TM 9-1425-525-12-4).
2. Remove bad assembly (para 3-12, TM 9-1430-529-34-2).
3. Take head assembly apart (fig. 3-9 and 3-10, TM 9-1430-529-34-2).
4. Take out bad part (fig. 3-9 and 3-10, TM 9-1430-529-34-2).
5. Put in the good part (fig. 3-9 and 3-10, TM 9-1430-529-34-2).
6. Put head assembly together (fig. 3-9 and 3-10, TM 9-1430-529-34-2).
7. Install good assembly (para 3-12, TM 9-1430-529-34-2).
8. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take DA Form 2407 to production control.

(See figure on page 2-329)

093-424-2071 (continued)

*Rotating-head assembly*

## REFERENCES:

FM 9-59  
 TM 9-1425-525-12-4  
 TM 9-1430-529-34-2  
 TM 38-750

093-424-2072

REPAIR HEAD AND TUBE ASSEMBLY

CONDITIONS:

Your section chief has given you a DA Form 2407 and told you to fix the head and tube assembly on an Improved HAWK Range Only Radar. You will do this task on-site or in a maintenance shop area. TM 9-1430-529-34-2 and TM 9-1430-529-12-1 will be used to do this task. You will need the following:

1. General mechanics tool kit
2. Ohmmeter ZM-21A/U or ZM-21B/U
3. Special tools listed in tables 1-1 and 2-1, TM 9-1430-529-34-2

STANDARDS:

All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE  
MEASURES:

1. Inspect rotating head assembly (tables 3-3 and 3-4, TM 9-1430-529-12-1).
2. Remove pedestal parts (para 3-29a, TM 9-1430-529-34-2).
3. Take apart the pedestal parts (fig. 3-34 and 3-35, TM 9-1430-529-34-2).
4. Replace the bad parts (fig. 3-34 and 3-35, TM 9-1430-529-34-2).
5. Assemble the repaired pedestal (fig. 3-38 and 3-39, TM 9-1430-529-34-2).
6. Install the repaired parts (para 3-29b, TM 9-1430-529-34-2).
7. Check your work by doing the test steps (para 2-6, TM 9-1430-529-34-2 and table 3-16, TM 9-1430-529-12-1).
8. Fill in blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
9. Take DA Form 2407 to production control.

REFERENCES:

FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

093-424-2073

REPAIR UPPER HEAD CONTACT RING AND HOLDER ASSEMBLY

**CONDITIONS:** Your section chief has given you a DA Form 2407 and told you to fix a bad upper head contact ring and holder assembly. You will do this task on-site or in a maintenance shop area. You will need a general mechanics tool kit and the TM's listed in the references to do this task.

**STANDARDS:** All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:**

1. Check the ring assembly (chap 2, TM 9-1425-525-12-4).
2. Remove the ring assembly (para 3-28a, TM 9-1430-529-34-2).
3. Remove bad part (fig. 4-35, TM 9-1430-529-34-2).
4. Install good part (para 3-28d, TM 9-1430-529-34-2).
5. Install ring assembly on the radar (para 3-28a, TM 9-1430-529-34-2).
6. Test the good part (table 3-16, TM 9-1430-529-12-1).
7. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
8. Take the DA Form 2407 to production control.

**REFERENCES:**

FM 9-59  
TM 9-1425-525-12-4  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

PERFORM REPLACEMENT AND ALINEMENT OF ROTATING HEAD SYNCHRO

- CONDITIONS: Your section chief has given you a DA Form 2407 and told you to do the replacement and alinement of the rotating head synchro. You will do this task on-site or in a maintenance shop area. TM 9-1430-529-12-1 and TM 9-1430-529-34-2 will be used to do this task. You will need the following:
1. General mechanics tool kit
  2. Boresight equipment listed in table 2-1, TM 9-1430-529-34-2
  3. Spanner Wrench OPN 10105071
- STANDARDS: All performance measures will be done IAW referenced manuals. You must follow all safety rules (para 5-10, FM 9-59).
- PERFORMANCE MEASURES:
1. Check the radar (table 3-0.1, TM 9-1430-529-12-1).
  2. Remove bad part (para 3-13a, TM 9-1430-529-34-2).
  3. Install good part (para 3-13b, TM 9-1430-529-34-2).
  4. Do the boresight check (para 2-3, TM 9-1430-529-34-2).
  5. Test the new part (table 3-16, TM 9-1430-529-12-1).
  6. Fill out blocks 20 and 25, DA Form 2407 (para 3-12, TM 38-750).
  7. Take the DA Form 2407 to production control.
- REFERENCES: FM 9-59  
TM 9-1430-529-12-1  
TM 9-1430-529-34-2  
TM 38-750

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2080

REPAIR STABILIZATION SYSTEM

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix the stabilization system on an Improved Pulse Acquisition Radar (IPAR). Do this task onsite or in a maintenance shop area. Use a general mechanics tool kit and repair kit OPN 5959077.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Do removal steps (para 3-3a, TM 9-1430-534-34-2).
2. Repair stabilization system (para 3-3b, c, d, e, TM 9-1430-534-34-2).
3. Install stabilization system (para 3-3f, TM 9-1430-534-34-2).
4. Check your work by doing test steps (table 3-16, steps 3 thru 6, table 3-20, steps 2 and 3, table 5-4, TM 9-1430-534-12-1 or tables 3-19, 3-20, step 2, and 5-4 in PIP TM).
5. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
6. Take DA Form 2407 to production control.

|                    |                       |                         |
|--------------------|-----------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b> | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59               | FM 9-59                 |
|                    | TM 9-1430-1534-12-1   | TM 9-1430-534-12-1      |
|                    | TM 9-1430-1534-34-2   | TM 9-1430-534-34-2      |
|                    | TM 38-750             | TM 38-750               |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2081

REPAIR GEAR CASE ASSEMBLY

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad gearcase assembly in the improved pulse acquisition radar. Do this task onsite or in a maintenance shop area. Use a general mechanics tool kit and all publications listed in the references.

STANDARDS: Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Remove gearcase assembly (para 3-19a, TM 9-1430-534-34-2).
2. Take bad gearcase apart (fig 3-29 and para 3-19b, TM 9-1430-534-34-2).
3. Put on good part (fig 3-29, TM 9-1430-534-34-2).
4. Put gearcase together (para 3-19c, TM 9-1430-534-34-2).
5. Test new gearcase (table 3-17, TM 9-1430-534-12-1).
6. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
7. Take DA Form 2407 to production control.

| REFERENCES: | PIP UNITS USE:      | IHAWK UNITS USE:   |
|-------------|---------------------|--------------------|
|             | FM 9-59             | FM 9-59            |
|             | TM 9-1430-1534-12-1 | TM 9-1430-534-12-1 |
|             | TM 9-1430-1534-34-2 | TM 9-1430-534-34-2 |
|             | TM 38-750           | TM 38-750          |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2082

# REPAIR TURNTABLE

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad turntable on an Improved Pulse Acquisition Radar (IPAR). Do this task onsite or in a maintenance shop area. Use a general mechanics tool kit and all publications listed in the references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Remove bad turntable (para 3-16a, TM 9-1430-534-34-2).
2. Take turntable apart (para 3-16a, and fig 3-22, TM 9-1430-534-34-2).
3. Install good part (fig 3-22, TM 9-1430-534-34-2).
4. Assemble turntable (para 3-16c, TM 9-1430-534-34-2).
5. Install turntable on radar (para 3-16c, TM 9-1430-534-34-2).
6. Test turntable (table 3-17, TM 9-1430-534-12-1).  
The test must be done by an IPAR repairer.
7. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
8. Take DA Form 2407 to production control.

|                    |                       |                         |
|--------------------|-----------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b> | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59               | FM 9-59                 |
|                    | TM 9-1430-1534-12-1   | TM 9-1430-534-12-1      |
|                    | TM 9-1430-1534-34-2   | TM 9-1430-534-34-2      |
|                    | TM 38-750             | TM 38-750               |



C1, FM 9-24L1/2

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2083

REPLACE QK-629 STABILIZATION CAVITY DRIVE BELT

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace the QK-629 stabilization cavity drive belt in the Improved Pulse Acquisition Radar. Do this task in a maintenance shop area. Use a general mechanics tool kit and all publications listed in the references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Read paragraph 3-6a, TM 9-1430-534-34-2, carefully.
2. Do removal procedures (para 3-6b, TM 9-1430-534-34-2).
3. Remove defective drive assembly (para 3-6c, TM 9-1430-534-34-2).
4. Tear down bad assembly (para 3-6d, TM 9-1430-534-34-2).
5. Replace bad drive belt (fig 3-11, TM 9-1430-534-34-2).
6. Reassemble repaired drive assembly (para 3-6e, TM 9-1430-534-34-2).
7. Check repair (table 3-16, steps 3 thru 6, table 3-20, steps 2 and 3, and table 5-4, TM 9-1430-534-12-1, or tables 5-4, 3-19, 3-20, step 2 in PIP TM).  
This check must be done by an IPAR repairer.
8. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
9. Take DA Form 2407 to production control.

C1, FM 9-24L1/2

REFERENCES: PIP UNITS USE:

FM 9-59  
TM 9-1430-1534-12-1  
TM 9-1430-1534-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-534-12-1  
TM 9-1430-534-34-2  
TM 38-750

C1, FM 9-24L1/2

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2084

REPAIR SHOULDERED SHAFT ASSEMBLY

CONDITIONS: Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad shouldered assembly on an Improved Pulse Acquisition Radar (IPAR). Do this task in a maintenance shop area. Use a general mechanics tool kit, torque wrench (inch-pounds), and publications listed in references.

STANDARDS: Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

PERFORMANCE MEASURES: NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Remove shouldered shaft assembly, (para 3-18a, TM 9-1430-534-34-2).
2. Disassemble bad shaft assembly (fig 3-27, TM 9-1430-534-34-2).
3. Remove bad parts (fig 3-27, TM 9-1430-534-34-2).
4. Install good parts (fig 3-27, TM 9-1430-534-34-2).
5. Assemble shaft assembly (para 3-18c and fig 3-27, TM 9-1430-534-34-2).
6. Install gearcase on radar (para 3-18d, TM 9-1430-534-34-2).
7. Test shaft with the help of an IPAR repairer (table 3-17, TM 9-1430-534-12-1).
8. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
9. Take DA Form 2407 to production control.

C1, FM 9-24L1/2

REFERENCES: PIP UNITS USE:

FM 9-59  
TM 9-1430-1534-12-1  
TM 9-1430-1534-34-2  
TM 38-750

IHAWK UNITS USE:

FM 9-59  
TM 9-1430-534-12-1  
TM 9-1430-534-34-2  
TM 38-750

C1, FM 9-24L1/2

C1, FM 9-24L1/2

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2085

#### REPAIR PALLET PEDESTAL SUPPORT

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to fix a bad pallet pedestal support in the Improved Pulse Acquisition Radar. Fix this support at the supported unit. Use the following:

1. General mechanics tool kit
2. Repair kit 5959169
3. Shop tools listed in paragraph 3-33a, TM 9-1430-534-34-2.
4. M-60 wrecker or overhead hoist
5. Publications listed in the references

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** NOTE: If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Fix pallet (para 3-33a and b, TM 9-1430-534-34-2).
2. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
3. Take DA Form 2407 to production control.

| REFERENCES: | PIP UNITS USE:      | IHAWK UNITS USE:   |
|-------------|---------------------|--------------------|
|             | FM 9-59             | FM 9-59            |
|             | TM 9-1430-1534-12-1 | TM 9-1430-534-12-1 |
|             | TM 9-1430-1534-34-2 | TM 9-1430-534-34-2 |
|             | TM 38-750           | TM 38-750          |

★ THIS TASK IS APPLICABLE TO PIP HAWK AND IHAWK

093-424-2086

REPLACE PALLET PEDESTAL SUPPORT MOUNT

**CONDITIONS:** Your section chief gave you a DA Form 2407, with section I completed, and told you to replace a bad pallet pedestal support mount in the Improved Pulse Acquisition Radar. Replace the support mount in a maintenance shop area. Use a general mechanics tool kit and electromechanical tool kit A03, and publications listed in references.

**STANDARDS:** Do performance measures IAW referenced publications. Follow all safety rules (para 5-10, FM 9-59).

**PERFORMANCE MEASURES:** **NOTE** If working in a PIP Unit, use PIP references.  
If working in an IHAWK Unit, use IHAWK references.

1. Remove bad support (para 3-33b and fig 3-41, TM 9-1430-534-34-2).
2. Install good support (fig 3-41, TM 9-1430-534-34-2).
3. Complete section II, DA Form 2407 (para 3-11, TM 38-750).
4. Take DA Form 2407 to production control.

|                    |                       |                         |
|--------------------|-----------------------|-------------------------|
| <b>REFERENCES:</b> | <b>PIP UNITS USE:</b> | <b>IHAWK UNITS USE:</b> |
|                    | FM 9-59               | FM 9-59                 |
|                    | TM 9-1430-1534-12-1   | TM 9-1430-534-12-1      |
|                    | TM 9-1430-1534-34-2   | TM 9-1430-534-34-2      |
|                    | TM 38-750             | TM 38-750               |



C1, FM 9-24L1/2

NOTES

## APPENDIX A

### REFERENCES

All references containing information on the subjects listed in this Soldier's Manual may not be listed here. New material is constantly being published, and present references may become obsolete. See the DA Pam 310 series and instructional material catalogs to keep up-to-date.

#### DEPARTMENT OF DEFENSE REGULATIONS (DOD)

5200.1-R Information Security Program Regulation

#### ARMY REGULATIONS (AR)

310-1 Publications, Blank Forms, and Printing Management

380-5 Department of the Army Supplement to DOD 5200.1-R (DODISPR)

600-9 Army Physical Fitness and Weight Control Program

710-2 Materiel Management for Using Units, Support Units and Installations

#### DA PAMPHLETS (DA PAM)

310-4 Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9) Supply Bulletins and Lubrication Orders

310-13 Posting and Filing Publications

#### FIELD MANUALS (FM)

5-15 Field Fortifications

5-20 Camouflage

9-59 Missile Support Unit Operations

21-11 First Aid for Soldiers

FM 9-24L1/2

FIELD MANUALS (FM)

|       |                                                                                                |
|-------|------------------------------------------------------------------------------------------------|
| 21-20 | Physical Readiness Training                                                                    |
| 21-40 | Chemical, Biological, Radiological and Nuclear Defense                                         |
| 21-41 | Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare  |
| 21-48 | Planning and Conducting Chemical, Biological, Radiological (CBR), and Nuclear Defense Training |
| 21-75 | Combat Training of the Individual Soldier and Patrolling                                       |
| 22-5  | Drill and Ceremonies                                                                           |
| 22-6  | Guard Duty                                                                                     |
| 23-9  | M16A1 Rifle and Rifle Marksmanship                                                             |
| 23-12 | Technique of Fire of the Rifle Squad and Tactical Applications                                 |
| 23-30 | Grenades and Pyrotechnic Signals                                                               |
| 23-31 | 40MM Grenade Launchers M203 and M79                                                            |
| 24-18 | Field Radio Techniques                                                                         |

TRAINING CIRCULAR (TC)

|       |              |
|-------|--------------|
| 21-11 | Pocket Medic |
|-------|--------------|

TECHNICAL MANUALS (TM)

|               |                                                                                    |
|---------------|------------------------------------------------------------------------------------|
| 3-220         | Chemical, Biological and Radiological (CBR) Decontamination                        |
| 3-4240-279-10 | Operator's Manual: Mask, Chemical-Biological: Field ABC-M17/M17A1, and Accessories |

TECHNICAL MANUALS (TM)

5-5321-2

Field and Depot Maintenance: Generator Set, Electric, Portable, Diesel Driven, Skid Mounted, AC, 45 kw, 60 Cycle, Convertible to 37.5 kw, 50 Cycle, Winterized, Cummins Engine Model JSGA-601-45 kw-60/50 Cycle-SF-45-D (Less Engine)

5-6100-210-ESC

Equipment Serviceability Criteria for Generator Set, Electric, Portable, DED, Skid Mtd 45 kw, 120 V, 3 Phase, 3 Wire, 120/208, 240/416V, 3 Phase, 4 Wire, 60 Hz, Convertible to 37.5 kw, 120 V, 3 Phase, 3 Wire, 120/208, 240/416 V, 3 Phase, 4 Wire, 50 Hz, Liquid Cooled, Consolidated Diesel Mdl 4070 and 4150; Cummins Mdl JSGA-601-45; Kurz and Root Mdl Alex 1; Stewart and Stevenson Mdl 54400; Hollingsworth Mdl JHDW-45A; 400 Hz, Consolidated Diesel Mdl 4060; Cummins Mdl JSG/A-601-45 and JS6-G-45; Harnischfeger Mdl 400A; Stewart & Stevenson Mdl 26200, 28100, and 52300

5-6100-214-ESC

Equipment Serviceability Criteria for Generator Set, Electric Portable, DED, Skid Mtd, 60 kw, 120/208, 240/416 VAC, 3 Phase, 4 Wire, 60 Hz, Convertible to 50 kw, 120/208, 240/416 VAC, 3 Phase, 4 Wire, 50 Hz, Liquid Cooled, Fully Inclosed, Cummins Models JS-6-G and JS-6-G-60; Jeta Model 601815-W; Allis Chalmers Model 3500; International Fermont Model M-60-DTT-SH-6; Onan Model SF-60-MD and HF-60-MD

5-6115-214-10

Operator's Manual: Generator Set, Diesel Engine: 45 kw, AC, 120/208, 240/416 V, 3 Phase, 400 Hertz, Skid Mounted (Stewart and Stevenson Model 28100) General Motors Engine Model 3045C, Series 3-71, Serial No. Range 28100-1 Thru 28100-154, FSN 6115-620-4075

5-6115-221-10

Operator's Manual: Generator Set, Diesel Engine, 45 kw, AC, 120/208, 240/416 V, 3 Phase, 400 Hertz, Skid Mounted (Stewart and Stevenson Model 26200) FSN 6115-557-8744

FM 9-24L1/2

TECHNICAL MANUALS (TM)

5-6115-235-10

Operator's Manual: Generator Set, Diesel Engine: 45 kw, AC 120/208, 240/416 V, 3 Phase, 400 Hertz Skid Mounted (Consolidated Diesel Model 4060), FSN 6115-624-0385

5-6115-274-12

Operator and Organizational Maintenance Manual: Generator Set, Diesel Engine, 45 kw, AC, 120/208, 240/416 V, 3 Phase, 400 Hertz, Skid Mounted (Stewart and Stevenson Model 52300) FSN 6115-475-6573

5-6115-545-12

Operator and Organizational Maintenance Manual: Generator Set, Diesel Engine Driven, Tactical Skid Mtd., 60 kw, 3 Phase, 4 Wire, 120/208 and 240/416 V, DOD Models MEP-006A, Utility Class, 50/60 Hertz, FSN 6115-118-1243, MEP-105A, Precise Class, 50/60 Hertz, 6115-118-1252, MEP-115A, Precise Class, 400 kw, 6115-118-1253 (To 35C2-3-444-1; NAVFAC-P-8-626-12; TM-00038G-12)

5-6125-209-15

Operator, Organizational, DS, GS and Depot Maintenance Manual: Motor Generator Power Supply, Generator, 60 kw, AC, 120/208 V, 240/416 V, 3 Phase, 4 Wire Service, 400 Cycle, DC Component, Output 28 V, 10 Amp, Motor Input, AC 120/208 V, 240/416 V, 3 Phase, 60 Cycle, Skid Mounted (John R. Hollingsworth Co. Model JHMX60G) FSN 6125-963-6712

9-1005-249-10

Operator's Manual: M16A1 Rifle

9-1425-525-12-1

Operator and Organizational Maintenance Manual: Emplacement of Improved HAWK Air Defense Guided Missile System (Improved HAWK Air Defense Guided Missile System)

9-1425-525-12-2

Operator and Organizational Maintenance Manual: System Functional Diagrams (Improved HAWK Air Defense Guided Missile System)

9-1425-525-12-4

Operator and Organizational General Maintenance for the Improved HAWK Guided Missile System

## TECHNICAL MANUALS (TM)

9-1400-500-12/4 Operator and Organizational Maintenance  
Manual: System Functional Interconnection  
Diagrams (HAWK Air Defense Guided Missile  
System)

9-1430-528-12-1 Operator and Organizational Maintenance  
Manual: Radar Set AN/MPQ-48 (XO-1)  
(Improved HAWK Air Defense Guided Missile  
System)

9-1430-528-34-2 Direct and Support and General Support  
Maintenance Manual: Radar Set AN/MPQ-48  
(XO-1) (Improved HAWK Air Defense Guided  
Missile System)

9-1430-529-12-1 Operator's and Organizational Maintenance  
Manual: Radar Set AN/MPQ-51 (XO-1) 10399038  
(W/E) 10674604 (WO/E) 1430-178-8454 (Improved  
HAWK Air Defense Guided Missile System)

9-1430-529-34-2 Direct Support and General Support Maintenance  
Manual: Radar Set AN/MPQ-51 (XO-1) (Improved  
HAWK Air Defense Guided Missile System)

9-1430-533-12-1 Operator and Organizational Maintenance Manual  
for Improved High-Powered Illuminator Radar  
Set AN/MPQ-46 (XO-1) (Improved HAWK Air  
Defense Guided Missile System)

(C)9-1430-533-12-2-1 Operator and Organizational Maintenance  
Manual: Functional Theory and Schematics  
for Radar Set AN/MPQ-46 (XO-1) (Improved  
HAWK Air Defense Guided Missile System) (U)

(C)9-1430-533-12-2-2 Operator and Organizational Maintenance  
Manual: Functional Theory and Schematics  
for Radar Set AN/MPQ-46 (XO-1) (Improved  
HAWK Air Defense Guided Missile System) (U)

9-1430-533-24P\* Organizational, Direct Support, and General  
Support Maintenance Repair Parts and Special  
Tools List (Including Depot Maintenance  
Repair Parts and Special Tools) for Radar  
Set, AN/MPQ-46 (XO-1) (Improved High Powered  
Illuminator) (NSN 1430-00-782-9816) (Improved  
HAWK Air Defense Guided Missile System)

FM9-24L1/2

TECHNICAL MANUALS (TM)

|                 |                                                                                                                                                                                                                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9-1430-533-34-2 | Direct Support and General Support<br>Maintenance Manual: Radar Set AN/MPQ-46<br>(XO-1) (Improved HAWK Air Defense Guided<br>Missile System)                                                                                                                                                                                  |
| 9-1430-534-12-1 | Operator and Organizational Maintenance<br>Manual: Radar Set AN/MPQ-50 (XO-1) (Improved<br>HAWK Air Defense Guided Missile System)                                                                                                                                                                                            |
| 9-1430-534-24P* | Organizational, Direct Support and General<br>Support Maintenance Repair Parts and Special<br>Tools List (Including Depot Maintenance<br>Repair Parts and Special Tools) for Radar Set<br>AN/MPQ-50 (XO-1) (Pulse Acquisition, Trailer<br>Mounted (NSN 1430-00-178-8453) (Improved<br>HAWK Air Defense Guided Missile System) |
| 9-1430-534-34-2 | Direct Support and General Support Maintenance<br>Manual for Radar Set AN/MPQ-50 (XO-1)<br>(Improved HAWK Air Defense Guided Missile<br>System)                                                                                                                                                                               |
| 9-1430-535-12-1 | Operator and Organizational Maintenance<br>Manual: Improved Platoon Command Post<br>AN/MSW-11 (XO-1) (Improved Air Defense<br>Missile System)                                                                                                                                                                                 |
| 9-1440-531-12-1 | Operator and Organizational Maintenance<br>Manual: Improved Guided Missile Zero Length<br>Launcher M192E1 or M192E2: Guided Missile<br>Loading and Storage Pallet M1E1 and Improved<br>Guided Missile Launching Section Control Box<br>AN/GSA-132 (XO-1) (Improved HAWK Air Defense<br>Guided Missile System)                 |
| 9-1440-531-12-2 | Operator and Organizational Maintenance<br>Manual: Functional Theory and Schematics<br>for Improved Guided Missile Zero-Length<br>Launcher M192E1 or M192E2 and Improved Guided<br>Missile Launcher Section Control Box<br>AN/GSA-132 (XO-1) (Improved HAWK Air Defense<br>Guided Missile System)                             |

## TECHNICAL MANUALS (TM)

- 9-1440-531-12-3 Operator and Organizational Maintenance Manual: Schematics for Improved Guided-Missile Zero Length Launcher M192E1 or M192E2 and Improved Guided Missile Launching Section Control Box AN/GSA-132 (XO-1) (Improved HAWK Air Defense Guided Missile System)
- 9-1440-531-24P Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tool Lists (Including Depot Maintenance Repair Parts and Special Tools) for Launcher, Zero Length, Guided Missile, XM192E1 (NSN 1440-00-805-3012): Control Box, Launching Section, Guided Missile AN/GSA-132 (XO-1), (NSN 1440-00-178-8455); Pallet, Loading and Storage, Guided Missile XM1E2 (NSN 1450-00-103-5399); Puller Kit (NSN 1450-00-700-8516) (Improved HAWK Air Defense Guided Missile System)
- 9-1440-531-34-1 DS and GS Maintenance Manual: Units of Guided Missile Zero Length Launcher XM-192E1 Tested at the High Frequency Console (Improved HAWK Air Defense Guided Missile System)
- 9-1440-531-34-2 Direct Support and General Support Maintenance Manual: Improved Guided Missile Launcher M192E1: Guided Missile Loading and Storage Pallet M1E2, and Improved Guided Missile Launching Section Control Box AN/GSA-132 (XO-1) (Improved HAWK Air Defense Guided Missile System)
- 9-1450-500-10 Operator's Manual for Loader-Transporter, Guided Missile: XM501E2 (1450-768-7046) and XM 501E3 (1450-066-8873) (HAWK Guided Missile System)
- 9-1450-500-20 Organizational Maintenance Manual: Loader-Transporter, Guided Missile: XM501E2 (1450-768-7046) and XM501E3 (1450-066-8873) (HAWK Guided Missile System)
- 9-1430-500-34 Direct and General Support Maintenance Manual for Loader-Transporter, Guided Missile XM501E2 (FSN 1450-768-7046) and XM501E3 (1450-066-8873) (HAWK Guided Missile System)



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TECHNICAL MANUALS (TM)

9-4935-501-14

Operator, Organizational, DS and GS  
Maintenance Manual Operatirons and Maintenance  
Instructions for Electronic Voltmeter, FSN  
6625-967-1504 (HAWK Air Defense Guided Missile  
System)

9-4935-540-14-1

Operator, Organizational, DS and GS  
Maintenance Manual: Guided Missile Remote  
Control System Shop Equipment AN/TSM-104  
(XO-1), AN/TSM-105 (XO-1), AN/TSM-106 (XO-1),  
AN/TSM-108 (XO-1) and AN/TSM-121 (XO-1)  
and Supplementary Equipment, Guided Missile  
Test Station AN/TSM-120 (XO-1) (Improved  
HAWK Air Defense Guided Missile System)

9-4935-540-14-2

Operator, Organizational, DS and GS  
Maintenance Manual: Schematics for Guided  
Missiles Remote Control System Shop Equipment  
AN/TSM-104 (XO-1), AN/TSM-105 (XO-1),  
AN/TSM-106 (XO-1), AN/TSM-108 (XO-1), and  
AN/TSM-121 (XO-1) and Supplementary Equipment  
Guided Missile Test Station AN/TSM-120 (XO-1)  
(Improved HAWK and Defense Guided Missile  
System)

9-4935-541-14

Operator, Organizational, Direct Support and  
General Support Maintenance Manual: Guided  
Missile System Shop Equipment AN/TSM-45 and  
AN/TSM-107 (XO-1) (Improved HAWK Air Defense  
Guided Missile System)

9-4935-541-34P\*

Direct Support and General Support Maintenance  
Repair Parts and Special Tools List (including  
Depot Maintenance Repair Parts and Special  
Tools) for Shop Equipment, Guided Missile  
System AN/TSM-107 (XO-1) (Shop No. 8)  
(NSN 4935-00-880-4510) (Improved HAWK Air  
Defense Guided Missile System)

9-4935-542-34

DS and GS Maintenance Manual: Units of Guided  
Missile Remote Control System Shop Equipment  
AN/TSM-112 Tested at the High-Frequency  
Control (Improved HAWK Air Defense Guided  
Missile System)

★ TECHNICAL MANUALS (TM) continued from page A-9.

|                     |                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9-1430-1528-12-1    | Operator and Organizational Maintenance<br>Manual: Radar Set, AN/MPQ-48 (XO-1)<br>(Improved HAWK Air Defense Guided Missile<br>System)                                 |
| 9-1430-1528-34-2    | Direct Support and General Support<br>Maintenance Manual: Radar Set, AN/MPQ-48<br>(XO-1) (Improved HAWK Air Defense Guided<br>Missile System)                          |
| 9-1430-1534-12-1    | Operator and Organizational Maintenance<br>Manual: Radar Set, AN/MPQ-50 (XO-2)<br>(Improved HAWK Air Defense Guided Missile<br>System)                                 |
| (C)9-1430-1534-34-1 | DS and GS Maintenance Manual: Units of<br>Radar Set, AN/MPQ-50 (XO-2) Tested at the<br>High Frequency Console (Improved HAWK Air<br>Defense Guided Missile System) (U) |
| 9-1430-1534-34-2    | Direct Support and General Support<br>Maintenance Manual or Radar Set AN/MPQ-50<br>(XO-2) (Improved HAWK Air Defense Guided<br>Missile System)                         |

C1, FM 9-24L1/2

TECHNICAL MANUALS (TM)

|                |                                                                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9-4935-543-14  | Operator, Organizational, Direct Support and General Support Maintenance Manual: Guided Missile System Shop Equipment (XO-1) XM2, XM2E1, XM2E2 (Improved HAWK Air Defense Guided Missile System) |
| 9-4935-548-14  | Operator, Organizational, DS and GS Maintenance Manual: Periodic Tests Using Calibrator Standard and Microwave Calibrator (Improved HAWK Air Defense Guided Missile System)                      |
| 10-277         | Protective Clothing, Chemical Operations                                                                                                                                                         |
| 11-2050        | Test Set I-48-B and Ohmmeter ZM-21A/U                                                                                                                                                            |
| 11-6625-239-12 | Operator's and Organizational Maintenance Manual: Electronic Multimeters TS-505A/U and TS-505B/U, and Multimeters TS-505C/U and TS-505D/U                                                        |
| 11-6625-274-12 | Operator's and Organizational Maintenance Manual Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U and TV-7D/U                                                                                   |
| 11-6625-475-10 | Operator's Manual: Multimeters AN/PSM-6, AN/PSM-6A and AN/PSM-6B                                                                                                                                 |
| 38-750         | The Army Maintenance Management System (TAMMS)                                                                                                                                                   |

TECHNICAL BULLETINS (TB)

|        |                                                               |
|--------|---------------------------------------------------------------|
| 43-180 | Calibration Requirements for the Maintenance of Army Materiel |
|--------|---------------------------------------------------------------|

TRAINING EXTENSION COURSE (TEC) LESSONS

|                |                                |
|----------------|--------------------------------|
| 911-441-0033-F | Burns and Eye Injuries         |
| 931-061-0060-F | NBC: The Mask                  |
| 931-061-0061-F | NBC: Masking and When To Do It |
| 931-061-0062-F | NBC: First Aid, Part 1         |

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TRAINING EXTENSION COURSE (TEC) LESSONS

|                |                                                       |
|----------------|-------------------------------------------------------|
| 931-061-0063-F | NBC: First Aid, Part 2                                |
| 931-061-0064-F | Individual Protection and Decontamination             |
| 931-061-0065-A | NBC: Maintenance of the M17 Series Mask               |
| 935-071-1029-F | Counterintelligence                                   |
| 936-061-0108-F | RTP, Part 1: Initiating and Responding to Radio Calls |
| 936-061-0110-F | RTP, Part 3: Responding to Messages                   |
| 936-061-0111-F | RTP, Part 4: Preparing Message to be Sent             |
| 936-061-0112-F | RTP, Part 5: Sending and Receiving Messages           |
| 937-061-0030-F | Cover, Camouflage and Concealment, Part 1             |
| 937-061-0032-F | Cover, Camouflage and Concealment, Part 3             |
| 939-071-0009-F | Loading and Unloading the M16A1 Rifle                 |
| 939-071-0010-F | Disassembly and Assembly of the M16A1 Rifle           |
| 939-071-0011-F | Maintaining the M16A1 Rifle                           |
| 939-071-0012-F | Preventing and Correcting Common Malfunctions         |
| 942-071-0001-F | The Hand Grenade - Types and Uses                     |
| 942-071-0002-F | Hand Grenade Maintenance and Identification           |
| 942-071-0003-F | The Hand Grenade: Carrying, Arming and Throwing       |

ARMY CORRESPONDENCE COURSE PROGRAM (ACCP)

|         |                                  |
|---------|----------------------------------|
| AG 0055 | Safeguarding Defense Information |
|---------|----------------------------------|

MISCELLANEOUS

|             |                                                            |
|-------------|------------------------------------------------------------|
| ACP 125-(D) | Communications Instructions - Radio - Telephone Procedures |
|-------------|------------------------------------------------------------|

MISCELLANEOUS

|                       |                                                                |
|-----------------------|----------------------------------------------------------------|
| NAVELEX 0969-161-9010 | Operator's Manual, Oscilloscope AN/USM-281C                    |
| NAVELEX 0969-161-9020 | Operation Instructions, Oscilloscope<br>AN/USM-281C            |
| 8125A/AQ-01           | Digital Multimeter, John Fluke Manufacturing<br>Company Manual |

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NOTES

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# APPENDIX B

## SAMPLE SQT NOTICE AND SCORABLE UNIT

### SQT NOTICE

The following is a sample of an SQT Notice. Each task to be tested will be included in the SQT Notice and will be written as shown in this sample:

| <u>TASK NUMBER</u> | <u>TASK TITLE</u> |
|--------------------|-------------------|
|--------------------|-------------------|

|              |                                           |
|--------------|-------------------------------------------|
| 093-396-1002 | Do the four lifesaving steps of first aid |
|--------------|-------------------------------------------|

Unit 1 will consist of eight questions. You must answer six questions correctly to score a GO. You will be put in a situation where you must pick the right steps to treat injured personnel. One question will require more than one answer.

Situation. You are the assistant driver of a truck taking the manning crew to the tactical site. Your truck is in an accident causing various injuries to the crew.

Question. A soldier has stopped breathing and has no heartbeat. Alternate between heart massage and **mouth-to-mouth resuscitation** at a heart-compression-to-breath ratio of

- A. 1:3.
- B. 4:1.
- C. 7:2.
- D. 10:3.
- E. 15:2.

### SCORABLE UNIT

The following is a sample scorable unit from the SQT. Only two of the eight questions are shown.

#### UNIT 1

##### DO THE FOUR LIFESAVING STEPS OF FIRST AID

Situation. You are the assistant driver of a truck returning to the support unit site from the firing range. Your truck is in an accident injuring soldiers aboard.



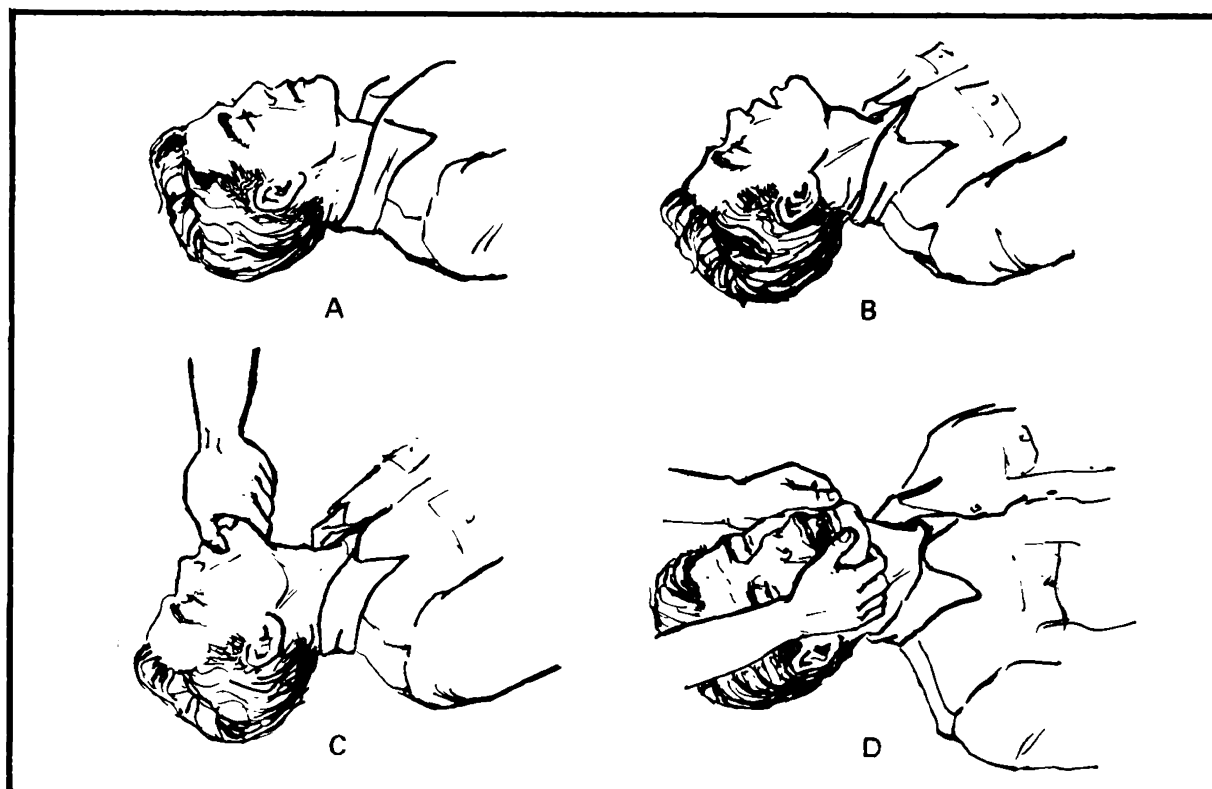


Figure 1

001. REFER TO FIGURE 1. One of the injured soldiers is having trouble breathing. Start first aid treatment by clearing the air passages, using the preferred method, which is

- |       |       |
|-------|-------|
| A. A. | C. C. |
| B. B. | D. D. |

002. (More than one answer is required.) Another soldier has a cut on the arm that is spurting blood. You cannot stop the bleeding by pressure so you apply a tourniquet. After the tourniquet is applied, you will

- A. dress and bandage the wound.
- B. insure that the tourniquet is exposed.
- C. mark a "T" on the soldier's forehead.
- D. indicate the time the tourniquet was applied.
- E. insure that medical personnel are the only personnel to loosen the tourniquet.

## APPENDIX C

### SOLDIER'S MANUAL QUESTIONNAIRE

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As the user of this manual, you are a vital member of our writing team. Please provide us your opinion and suggestions by filling out this questionnaire. Be sure to include your name, AUTOVON number, and unit so we can follow up on your suggestions.

|                     |                       |
|---------------------|-----------------------|
| UNIT ADDRESS _____  | AUTOVON _____         |
| _____               | NAME _____            |
| DUTY POSITION _____ | RANK _____            |
| TIME IN GRADE _____ | TIME IN SERVICE _____ |

1. Are there any tasks that should be added? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
2. Are there any tasks that should be dropped? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
3. What would you do to improve the organization of the task list?  
 \_\_\_\_\_  
 \_\_\_\_\_
  
4. Did you have any trouble finding what you needed in this manual? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
5. Did you have any trouble understanding the material in this manual? ☐ Yes ☐ No  
 If your answer is Yes, which part(s) was unclear?  
 \_\_\_\_\_  
 \_\_\_\_\_
  
6. Were the CONDITIONS the way you normally perform each task? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
7. Did you disagree with any of the STANDARDS? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
8. Did the TRAINING SECTION help you perform the tasks to the STANDARDS listed ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
9. Did this manual help you to do a better job? ☐ Yes ☐ No  
 \_\_\_\_\_  
 \_\_\_\_\_
  
10. Did you find any errors? ☐ Yes ☐ No  
 If answer is Yes, please list.  
 \_\_\_\_\_  
 \_\_\_\_\_

Continued on next page

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FOLD ALONG DOTTED LINE

11. Should information from other publications be included in this manual? ☐ Yes ☐ No  
If your answer is Yes, which and why.

\_\_\_\_\_

\_\_\_\_\_

12. Trainers Only: Did this manual help you improve the combat efficiency of your organization? ☐ Yes ☐ No

\_\_\_\_\_

\_\_\_\_\_

13. What would you do to improve this manual?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

14. Comments:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thank you for your time. Please remove this questionnaire, fold in half, staple, and drop in the mailbox. No stamp is needed.

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C-2

STAPLE  
HERE

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